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OVERSIGHT HEARING ON: HERGER-FEINSTEIN QUINCY LIBRARY GROUP FOREST RECOVERY ACT

OVERSIGHT HEARING

BEFORE THE

SUBCOMMITTEE ON FORESTS AND FOREST HEALTH

OF THE

COMMITTEE ON RESOURCES
HOUSE OF REPRESENTATIVES

ONE HUNDRED SIXTH CONGRESS

FIRST SESSION

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OVERSIGHT HEARING ON: HERGER-FEINSTEIN QUINCY LIBRARY GROUP FOREST RECOVERY ACT

MONDAY, august 30, 1999

House of Representatives,
Subcommittee on Forests and
Forest Health,
Committee on Resources,
Redding, California

The Subcommittee met, pursuant to call, at 9 a.m., in Redding City Council Chambers, 1313 California Street, Redding, California, Hon. Helen Chenoweth [chairman of the Subcommittee] presiding.

Member present: Representative Chenoweth

STATEMENT OF HON. HELEN CHENOWETH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF IDAHO

Mrs. Chenoweth. The Subcommittee will come to order. The Subcommittee is meeting here today to hear testimony on the Herger-Feinstein Quincy Library Group Forest Recovery Act. Mr. Herger and I both want to thank you very much for making the time to come here today, and I am deeply grateful to all of you for participating in a historic event.

It is ironic that as I stepped out of my hotel today I smelled smoke of some of the 150 reported forest fires burning in Northern California. We also have new forest fires burning in Southern California. All we hear about is the hurricane on the national news.

This is ironic because the very plan that we agreed on was designed to deal more effectively with the problem of forest fires, yet here we are, seven years later, and we are just beginning to implement the plan. I do not want to cast blame for this sad fact, and both Congressman Herger and I want to discuss the future with you. We want to discuss how to avoid the mistakes of the past and get on with conducting the pilot project that you struggle to promote for the forests, the wildlife, the people, who live throughout Northern California.

We want to discuss where things stand with implementation of the Herger-Feinstein Quincy Library Group Forest Recovery Act. We also want to discuss the recently issued record of decision as directed by that Act and your plans to work together to get this project started.

[The information may be found at the end of the hearing.]

[The Record of Decision follows]

Mrs. CHENOWETH. Before we begin, though, congratulations are in order. We are now at a place and time, after seven long years for the Quincy Library Group, where the forest plan developed by diverse members and personalities of a rural California community can be legally implemented by your Federal Forest Service.

You have overcome substantial hurdles, and you put your heads together and came up with a plan that worked for everyone in your community. It worked for the ecologic integrity of the forest and the species that rely on the forests, including the human species.

You overcame administrative hurdles and legislative hurdles, tremendous hurdles. Your bill passed the House three times—once 329 to 1 and once unanimously. It passed the Senate once. It was signed by the President. And I think this was the first major forest management bill signed by this President.

Your forest plan was scrutinized in a nearly 500-page environmental impact statement and a 16-page record of decision. Many people inside and outside of the Forest Service did not want the QLG plan to see the light of day, but many more did want to give it a chance. And so we are here today.

That is because it is a plan that seeks to use man's knowledge and wherewithal to facilitate the ecological balance of forests that belong to everyone. It's a plan that acknowledges man's desire to provide an economic balance in the rural timber communities in this part of Northern California.

It is a plan that recognizes that human beings are good, and that we are not about destroying the forests that God has given us. It also acknowledges that people are part of nature, and that some parts of nature should also be left alone.

So I think that congratulations are in order. I want to, first, congratulate my colleague Wally Herger. This Congressman has worked tirelessly on your behalf, both inside Washington, DC and outside. His energy is unbounded, and I am so very impressed. He serves as an inspiration to me.

I want to also congratulate George Terhune, Linda Blum. I want to congratulate Tom Nelson, and I want to congratulate Frank Stewart. Congratulations Michael Jackson, and congratulations Bill Coats, and one of my very favorite people, Rose Comstock. Congratulations to the QLG members. Congratulations Brad Powell, Kathryn Silverman, Mark Madrid, Steven Eubanks, and Dave Peters of the Forest Service. And congratulations to Mike Spear of the Fish and Wildlife Service.

I also want to thank my colleague in the Senate, my senior Senator, Larry Craig, for the part that he has played in this. And I want to thank California senior Senator Dianne Feinstein. You all made this plan and have brought it here today, ready for implementation.

Now, I realize that it is a rare occasion that I congratulate people in the Forest Service and in the Fish and Wildlife Service on the same day. But you all deserve a piece of the credit for belonging and bringing this community-based plan to a point where it can now be implemented as a pilot project. It offers hope to those of us who care deeply about balance in our national forests.

And while some of this hearing will focus on the specifics of the EIS and the record of decision, I very much look forward to hearing about the future, hearing about how you all plan to work together to make this project really finally happen and before this new century begins. We want to see work on the ground.

After seven years of work, the Plumas, the Lassen, and the Tahoe forests, and the species that depend on them, including—and in my opinion, very, very importantly—the human species, deserve nothing less than implementation this year.

Thank you all for coming, and now I turn to my colleague, Congressman Herger, for his opening statement.

[The prepared statement of Mrs. Chenoweth follows:]

STATEMENT OF HON. HELEN CHENOWETH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF IDAHO

Mr. Herger and I thank you for making the time to come here today. We want to discuss where things stand with the Herger-Feinstein Quincy Library Group Forest Recovery Act. We also want to discuss the recently issued Record of Decision as directed by that Act, and your plans to work together to get this project started.

Before we begin, though, congratulations are in order. We are now at a place and time, after seven long years for the Quincy Library Group, where the forest plan developed by diverse members and personalities of a rural California community CAN BE LEGALLY IMPLEMENTED BY YOUR FEDERAL FOREST SERVICE!

You have overcome substantial hurdles. You put your heads together and came up with a plan that worked for everyone in your community. It worked for the ecologic integrity of the forest and the species that rely on the forest—including human beings.

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It is a plan that recognizes that human beings are good, that we are not about destroying the forests that God has given us. It also acknowledges that people are part of nature, but that some parts of nature should be left alone.

So I think that congratulations are in order. Congratulations Linda Blum. Congratulations George Terhune. Congratulations Tom Nelson. Congratulations Frank Stewart. Congratulations Mike Jackson. Congratulations Bill Coats. Congratulations Rose Comstock. Congratulations QLG members. Congratulations Brad Powell, Kathryn Silverman, Mark Madrid, Steven Eubanks and Dave Peters of the Forest Service. Congratulations Mike Spear of the Fish and Wildlife Service. Congratulations Wally Herger and Congratulations Senator Larry Craig and Senator Diane Feinstein. You all made this plan and have brought it here today—ready for implementation.

Mr. HERGER. Madam Chairman, thank you for arranging this hearing today on the Quincy Library Group Forest Recovery Act. This legislation is a breakthrough for those of us interested in finding bipartisan and cooperative solutions to forest management issues. It has received the full support and backing of the forest products industry, local environmentalists, labor, local officials, and concerned citizens.

I'd like to take a moment to applaud Senator Dianne Feinstein for taking on the challenge to support this legislation on behalf of the people of Quincy and of California. I'd also like to thank her for standing behind her principles to support the Quincy Library

Group. Her assistance is reflective of the spirit of coming together that epitomizes the QLG experience.

I would also like to thank the Forest Service for their hard work in preparing this environmental impact statement, both the leadership at the regional level and the staff who worked diligently on the EIS. I commend them for supporting and selecting Alternative 2 in the face of opposition from certain extreme environmental organizations opposed to local consensus and collaboration. This is the correct decision and is consistent with the intent of Congress in overwhelmingly passing the Act.

I'd also like to express my deep appreciation to the Quincy Library Group. Focused on the realization that something had to be done to remove the gridlock that has prevented responsible forest management for the last 15 years, the members of the QLG set aside their differences and worked together to develop local, consensus-driven solutions. Through their hard work and dedication to this project, they have demonstrated an immeasurable commitment to improving the health and well-being of the communities and forests in which they live and work.

The selection of Alternative 2 gets us one step closer to actual implementation of this historic pilot project which is truly a win-win for our forests and our communities. This project is good for people, it is good for the environment, and it is good for the forests.

Currently, 39 million acres of our forests—western forests—are at a frighteningly high risk of destruction from catastrophic fire. A recently released Government Accounting Office report called western national forests a "tinderbox." In some areas, our national forests are two and three times denser than they were back in 1928. Thick undergrowth, combined with increasingly taller layers of intermediate trees, has turned western forests into deadly fire time bombs.

Now, when a fire starts, it quickly climbs up the dense tree growth like a ladder until it tops out at the uppermost or crown level of the forest and races out of control as a catastrophic fire. Because of their high speed and intense heat, crown fires are nothing like the normally healthy fires of the past, but have the capability of leaving an almost sterile environment in their wake with almost no vegetation, wildlife, or habitat left behind.

This past week over 150 separate fire incidents, caused by more than 3,000 lightning strikes, have raged throughout my Northern California district, placing life and property at risk. This tragedy shows the constant and imminent threat of wildfire devastation facing our citizens and communities every day. It emphasizes what the QLG has stressed all along—that we absolutely must address this wildfire risk immediately.

And it emphasizes the need to implement a plan such as that proposed by the Quincy Library Group on forests throughout the west. Experts believe that the window of opportunity for taking effective management action is only about 10 to 25 years before catastrophic wildfires become widespread.

The Quincy Library Group proposal uses the best science available to address this impending wildfire threat, while providing economic benefits to our struggling rural communities. It protects the Federal forest lands. It protects owls and other animals. It has the best chance of producing a fire-resistant forest. It is the most balanced alternative for community stability and jobs.

Although certain extreme organizations have misled the public during the course of this debate, portraying the QLG project as a logging bill and claiming that it would destroy owl habitat, in reality, the project has always been about addressing the extreme fire danger facing our rural communities and preserving our forest ecosystems for future generations.

The possibility that owl habitat could be lost entirely because of a devastating wildfire is too often overlooked. If we do not combat this risk now, we might not have anything left to save.

We have a historic opportunity before us to prove, through tangible, on-the-ground results, that economic stability and forest health are not mutually exclusive. This decision is an important first step. However, we must now put this EIS behind us and direct our energies toward proper implementation of the pilot project. The Forest Service must continue to collaborate with the QLG to ensure that on-the-ground activities are conducted as Congress and the QLG intended.

We must work to ensure that the activities are carried out on the scale and at the pace and will provide the full economic and ecological benefits envisioned. We must work to ensure that measures are put into place on the ground to effectively eliminate any potential negative effects on livestock grazing. The Forest Service must continue to place its good faith support behind the QLG proposal.

I believe the QLG project will provide the model for effective management of our western forests. This plan represents an entirely new approach to managing our national forests. It is history in the making. It is also an opportunity to reinforce that local coalitions, not Washington bureaucracies, are best at deciding what will work for their communities.

Thank you, Madam Chairman.

[The prepared statement of Mr. Herger follows:]

STATEMENT OF HON. WALLY HERGER, A REPRESENTATIVE IN COGRESS FROM THE STATE OF CALIFORNIA

Madam Chairman, thank you for arranging this hearing today on the Quincy Library Group Forest Recovery Act. This legislation is a breakthrough for those of us interested in finding bipartisan and cooperative solutions to forest management issues. It has received the full support and backing of the forest products industry, local environmentalists, labor, local officials and concerned citizens.

I would like to take a moment to applaud Senator Dianne Feinstein for taking on the challenge to support this legislation on behalf of the people of Quincy. I would also like to thank her for standing behind her principles to support the Quincy Library Group. Her assistance is reflective of the spirit of coming together that epitomizes the QLG experience.

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Currently, 39 million acres of our western forests are at a frighteningly high risk of destruction from catastrophic fire. A recently released Government Accounting Office report called western National Forests a “tinderbox.” In some areas, our National Forests are 2 to 3 times denser than they were in 1928. Thick undergrowth, combined with increasingly taller layers of intermediate trees, has turned western forests into deadly fire time bombs. Now, when a fire starts, it quickly climbs up the dense tree growth like a ladder until it tops out at the uppermost, or “crown,” level of the forest and races out of control as a catastrophic fire. Because of their high speed and intense heat, “crown fires” are nothing like the normally healthy fires of the past, but have the capability of leaving an almost sterile environment in their wake with almost no vegetation, wildlife, or habitat left behind.

This past week, over 100 separate fire incidents, caused by more than 3,000 lightening strikes, have raged throughout my Northern California District, placing life and property at great risk. This tragedy shows the constant and imminent threat of wildfire devastation facing our citizens and communities every day. It emphasizes what the QLG has stressed all along—that we absolutely must address this wildfire risk immediately. And it emphasizes the need to implement a plan such as that proposed by the Quincy Library Group on forests throughout the west. Experts believe that the window of opportunity for taking effective management action is only about 10 to 25 years before catastrophic wildfires become widespread.

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I believe the QLG project will provide THE model for effective management of our western forests. This plan represents an entirely new approach to managing our National Forests. It is history in the making. It is also an opportunity to reinforce that local coalitions, not Washington bureaucracies, are best at deciding what will work for their communities.

Thank you, Madam Chairman.

Mrs. CHENOWETH. Thank you, Mr. Herger.

It is my privilege to be able to introduce our first panel now. Mr. Mike Jackson will be joining us first from the Quincy Library Group Steering Committee, Quincy, California; Mr. George Terhune, Quincy Library Group Steering Committee, also from Quincy, California; accompanied by Linda Blum of the Quincy Library Group, and Mr. Ed Murphy of Sierra Pacific Industries.

As explained in our first hearing, it is the intention of the Chairman to place all witnesses under oath. This is a formality of the committee that is meant to assure open and honest discussion and should not affect the testimony given by the witnesses.

I believe that all of the witnesses were informed of this before appearing here today, and that you all have been provided a copy of the committee rules.

Now, if you will just please stand and raise your right arm to the square.

[Witnesses sworn.]

The Chairman now recognizes Mr. Mike Jackson for testimony.

STATEMENT OF MIKE JACKSON, QUINCY LIBRARY GROUP STEERING COMMITTEE, QUINCY, CALIFORNIA

Mr. JACKSON. Thank you, Chairman Chenoweth. The words that you have spoken, the words that Congressman Herger have spoken, basically make all of the time worthwhile. And I really want to thank you for the steadfastness of your support and personal instructions that you have given each and every one of our members.

It is a great honor to return to testify before this Subcommittee of Congress. The opportunity to participate in the noble experiment that is the subject of this hearing has been one of my most fulfilling personal experiences. While not all of the moments of the last seven years have been pain-free, basically I believe that democracy and law can work, and that the Quincy Library Group experience proves that fact.

Since George Terhune is also testifying, and since Linda and Ed are here to answer questions, they will cover the substantive parts of the Quincy program for you. But I feel free to limit my comments to the seven-year process of the program.

When we first set down to attempt to find common ground, we actually thought the source of the problems confronting our communities was local. We were wrong. While there were, and are, values and beliefs in the community that are different, those legitimate differences are not the source of the almost violent differences between the people of the west.

The substantive differences are more about means than ends, and the problems dividing us can be solved. The lack of scientific certainty about public land ecosystems will always leave room for different views about proper management, but there is no excuse for the present management paralysis.

The land has needs, the people who live in it have needs, and the great urban communities of the west have needs. How can they all be reconciled?

For the Quincy program, the Congress and the Forest Service have established a balance between these needs and the health of the forest. I still believe that that balance is approximately correct and feel validated by the Forest Service decision to proceed. I look forward to the monitoring and analysis that will finally tell us who was right and who was wrong about this particular solution to our problems in the Northern Sierra Nevada.

But today, because I think it will be instructive, I would like to talk about a tale of two cities—one small and rural, one large and urban. Quincy and San Francisco have a relationship much like rural and urban communities in the rest of the west. San Francisco is very liberal; Quincy is mostly conservative. San Francisco is very rich; Quincy is quite poor. San Francisco is politically powerful; Quincy is almost unknown in California and Washington, DC.

Most of San Francisco's property is private; most of the area around Quincy is national forest. Over the last 150 years, most of the damage in the local national forests have been done by San Francisco corporations and citizens. The mining and lumber industries were centered in San Francisco, and most of the profit from mining, logging, and agriculture has traditionally gone to San Francisco, in much the same way resources overseas have gone to the colonial power, not to the local people.

A quick comparison shows the power imbalance. San Francisco gets its water from Yosemite National Park, from the flooded Hetch Hetchy Valley. Quincy pumps local groundwater. San Francisco gets its power from Yosemite National Park as well, and a San Francisco corporation—PG&E—has dammed and destroyed all of the rivers of the Sierra Nevada for urban shareholder profit. Quincy gets part of its power from PG&E and part from a rural electric cooperative.

San Francisco controls another national park, the Presidio, with absolute local control. A private corporation rents commercial space to, among others, the Wilderness Society and the George Lucas Corporation. No one else in America gets any say in the management of this national park, and there is no opportunity for input since this operation was exempted from NEPA. Quincy has plowed ahead within all applicable laws and with thorough NEPA review.

So why are there two sets of rules about public land? Why is San Francisco allowed to destroy major parts of two national parks with not a word from the Wilderness Society and the Sierra Club? But Quincy is accused of demanding local control of the nearby forests.

For the last seven years, I have been trying to understand what seems to be a double standard. Now that our program is through the hurdles placed in front of it by the San Francisco-based Sierra Club and Wilderness Society, I am still not completely sure why there is two sets of rules. All people are capable of hypocrisy, and I have certainly been guilty of it myself at times. But why can't the San Franciscans see it in themselves?

I think this is because this urban/rural debate is not about the environment. It's about power. The colonial attitude of the urban environmental movement is not new to San Franciscans, and the disrespect that the elitist movement types have for rural people would exist no matter what people in Quincy do now or in the future. There will never be a sharing of responsibility and authority as long as the movement is more important than either the local people or the environment.

The experience of the Quincy Library Group is different for every member. For me, the experience has taught me lifetime lessons. Some of them have been bitter, indeed, but most have touched my heart and thrilled my mind. Democracy works. The constitutional right to peaceably assembly with anyone of our choice to petition our government to redress our grievances is not just old dead words. These guarantees live today, and on behalf of my community I wish to thank the many great Americans who have gone out of their way to help us.

First, I want to thank President Clinton for motivating us at the Northwest Forest Summit in Portland in 1993 when he told all of us to get out of the courtroom and work out these problems. Next, I want to thank Congressman Herger and Senator Feinstein, both of whom have been brave and steadfast in our support under intense pressure from their own natural constituencies. I want to thank Congressmen Don Young and Sherwood Boehlert and Senators Craig, Lott, Murkowski, Gorton, Daschle, Reid, and Bumpers for their help and inspiration.

I also want to thank hundreds of government employees in the Agriculture, Interior, and Energy Departments with whom I have worked.

I believe that America enters the 21st century a great and proud nation, with capable and compassionate leadership in both parties and in government service. Lastly, I want to thank the members of this Subcommittee and the full Committee for your time and consideration.

I have only one further request for your consideration. When the next group of citizens comes forward, please give them the same time and consideration that you have given to us. You have proven to me that this is still a government of the people, by the people, and for the people.

Thank you, Chairman Chenoweth, for your service and for your willingness to consider our new ideas.

[The prepared statement of Mr. Jackson follows:]

STATEMENT OF MICHAEL B. JACKSON, ATTORNEY AT LAW, 429 WEST MAIN STREET, QUINCY, CALIFORNIA

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For the Quincy program, the Congress and the Forest Service have established a balance between these needs and the health of the forest. I still believe that balance is approximately correct and feel validated by the Forest Service decision to proceed. I look forward to the monitoring and analysis that will finally tell us who was right and who was wrong about this particular solution to our problems in the Northern Sierra Nevada.

But today, because I think it will be instructive, I would like to talk about a tale of two cities, one small and rural, one large and urban. Quincy and San Francisco have a relationship much like rural and urban communities in the rest of the West. San Francisco is very liberal, Quincy is mostly conservative. San Francisco is very rich, Quincy is quite poor. San Francisco is politically powerful, Quincy is almost completely unknown in California and Washington. Most of San Francisco's property is private, most of the area around Quincy is national forest.

Over the last 150 years, most of the damage in the national forest has been done by San Francisco corporations and citizens. The mining and lumber industries were centered in San Francisco, and most of the profit from mining, logging and agriculture has traditionally gone to San Francisco in much the same way resources overseas have gone to the colonial power, not to the local people.

A quick comparison shows the power imbalance. San Francisco gets its water from Yosemite National Park, from the flooded Hetch Hetchy Valley. Quincy pumps local groundwater. San Francisco gets its power from Yosemite National Park as well, and a San Francisco corporation, PG&E, has dammed and destroyed all the rivers of the Sierra Nevada for urban shareholder profit. Quincy gets part of its power from PG&E and part from a rural electric cooperative. San Francisco controls another national park, the Presidio, with absolute local control. A private corporation rents commercial space to, among others, the Wilderness Society and the George Lucas corporation. No one else in America gets any say in the management of this national park and there is no opportunity for input since this operation was exempted from NEPA. Quincy has plowed ahead, within all applicable laws and with thorough NEPA review.

So why are there two sets of rules about public land? Why is San Francisco allowed to destroy major parts of two national parks with not a word from the Wilderness Society and the Sierra Club, but Quincy is accused of "demanding local control" of the nearby forests? For the last seven years, I have been trying to understand what seems to be a double standard. Now that our program is through the hurdles placed in front of it by the San Francisco-based Sierra Club and Wilderness Society, I am still not completely sure. All people are capable of hypocrisy and I have certainly been guilty myself at times, but why can't the San Franciscans see it in themselves?

I think it is because this urban-rural debate is not about the environment, it is about power. The colonial attitude of the urban environmental movement is not new to San Franciscans, and the disrespect that the elitist "movement" types have for rural people would exist no matter what people in Quincy do now or in the future. There never will be a sharing of responsibility and authority as long as the "movement" is more important that either local people or the environment.

The experience of the Quincy Library Group is different for every member. For me, the experience has taught me lifetime lessons. Some of them have been bitter indeed. But most have touched my heart and thrilled my mind. Democracy works. The Constitutional right to peaceably assemble with anyone of our choice to petition our government to redress our grievances is not just old dead words. These guarantees live today, and on behalf of my community I wish to thank many great Americans who have gone out of their way to help us.

First, I want to thank President Clinton for motivating us at the Northwest Forest Summit in Portland in 1993 when he told all of us to get out of the courtroom and work out these problems. Next I want to thank Congressman Herger and Senator Feinstein, both of whom have been brave and steadfast in our support under intense pressure from their own natural constituencies. I want to thank Congressmen Don Young and Sherwood Boehlert and Senators Craig, Lott, Murkowski, Gorton, Daschle, Reid and Bumpers for their help and inspiration.

I also want to thank hundreds of government employees in the Agriculture, Interior and Energy Departments with whom I have worked.

I believe that America enters the 21st century a great and proud nation, with capable and compassionate leadership in both parties and in government service. Lastly I want to thank the members of this Subcommittee and the full Committee for your time and consideration. I have only one further request for your consideration. When the next group of citizens comes forward, please give them the same time and consideration that you have given to us. You have proven to me that this is still a government of the people, by the people, and for the people.

Thank you, Chairman Chenoweth, for your service and for your willingness to consider our new ideas.

BIOGRAPHIOCAL SKETCH MICHAEL B. JACKSON

Michael Jackson graduated from the University of California, Hastings College of the Law, in 1972. He practices water and environmental law and has represented environmental groups and local government agencies in many state and Federal actions, including State Water Resources Control Board hearings on the Bay Delta and many California rivers. Mr. Jackson is currently Water Attorney for the Regional Council of Rural Counties, a coalition of 27 rural California counties. He is also Special Water Counsel for Plumas County.

Mr. Jackson is a co-founder of the Quincy Library Group, a community collaborative effort designed to balance environmental health and economic recovery in Plumas, Lassen, and Sierra counties. He has been a lecturer and seminar participant for many American universities and for several private policy foundations on the subjects of natural resources, water, and the environment.

Mrs. CHENOWETH. Thank you, Mr. Jackson, for that outstanding testimony.

The Chair now recognizes Mr. Terhune.

STATEMENT OF GEORGE TERHUNE, QUINCY LIBRARY GROUP STEERING COMMITTEE, QUINCY, CALIFORNIA, ACCOMPANIED BY LINDA BLUM, QUINCY LIBRARY GROUP, AND TOM NELSON, QUINCY LIBRARY GROUP, CALIFORNIA

Mr. TERHUNE. Chairman Chenoweth, Congressman Herger, I am George Terhune, a retired airline pilot, and co-chairman of the QLG Pilot Project Consultation Committee. Thank you for this opportunity to address your Committee on behalf of our committee.

At this point, QLG is most interested in two things—successful implementation of the pilot project and a reasonable outcome to the Sierra Nevada Forest Plan Amendment EIS now being developed in the Sierra Nevada conservation framework.

Regarding the pilot project, we first want to express our profound gratitude and admiration to Congressman Herger and his staff, to Senator Feinstein and her staff, and to this Committee and its staff, for their continuous rock-solid support during the two and a half years it took to enact the legislation and obtain a Forest Service decision to implement it.

QLG supports the decision to adopt Alternative 2 and will work diligently to help assure that it is implemented correctly and in a cost-effective manner. However, we must point out that this was a good decision but reached by some questionable processes that do need to be corrected.

In my written testimony there are several specifics. At this time, I just want to emphasize two problem areas that were changes made by the Forest Service at the last minute.

First, they decided to implement a mitigation instead of following the California spotted owl guidelines that are specified in the Act. This mitigation says that activities will "completely avoid suitable California spotted owl habitat, including nesting habitat and foraging habitat."

QLG does believe it would have been preferable to implement the guidelines as required by the Act, and that the substitute mitigation is very likely to introduce some problems because there are no rigorous definitions provided for "suitable California spotted owl habitat or nesting habitat or foraging habitat."

And the wording implies that additional habitat other than nesting and foraging habitat is included in the prohibition. At the very least, we believe that the proper definition should be supplied and that the mitigation should be changed to say that the projects will avoid just the nesting and foraging habitat, because we believe that was the intention and the ambiguous wording might cause problems.

The second change has to do with the limited operating periods—they are called LOPs—which are periods where activity is restricted in an area due to the presence of a rare animal or a bird at a sensitive time of its life cycle. Twelve species are on the list, and for 11 of them the LOP seems reasonable.

For example, for a sandhill crane it limits activity within half a mile of known nesting sites from April 1st through August 1st.

However, for the 12th species on the list, the California red-legged frog, the LOP applies to "all unsurveyed and occupied suitable habitat, starting on October 1st or with the first quarter-inch rain of the season and continuing until April 15th of the following year."

That is potentially a very long shutdown period. It is over very large areas where these frogs are almost certain not to exist at all.

The concern about this—I called and talked to Dave Peters about it briefly, and apparently some survey of this nature is already done routinely for projects. The problem is that this was listed in the final EIS as an amended forest plan direction, which indicates that there is something beyond that intended by it, a more comprehensive requirement for the surveys than what we believe would be warranted.

We believe that this LOP should be changed, at least to be as site-specific as possible, and that it should be related to actual known locations of these frogs, not to all unsurveyed potential habitat.

I would also like to put in a few words here about the fires recently experienced and still going on. It is too early at this time to determine whether one fuel reduction strategy or another would have worked better in this situation.

What we do know is that at least for the Plumas and Lassen forests we were very lucky. In many places it was only the relatively calm winds that saved us from catastrophe. The most worrisome thing about the situation we actually faced was an almost immediate indication that Forest Service suppression capability was stretched pretty much to its limit. There was no capability apparent to be able to handle wind-driven fires if the wind had come up.

The decisive advantage of fuel breaks is that in a bad fire situation the effectiveness of suppression forces is greatly increased. Now, we don't know at this time how well they will work, until the fuel break network is actually in place. So our job now is to implement the pilot project and monitor it closely to find out how well this will work in a truly potential catastrophic situation.

Now, I have saved one subject, perhaps the most important one, for last. The pilot project cannot succeed unless it continues to be supported by earmarked funding to carry it out in full. On this subject, it is important to note that the final EIS shows that implementation of Alternative 2 will greatly improve the ratio of Federal revenues of Federal costs and hugely increase both direct and secondary economic activity in the QLG area. Frank Stewart will be addressing this subject in more detail later.

But when you add the Federal and local economic benefits to the reduction in fire hazard, the improvements in forest health, and the previously unavailable information that this pilot project will give us, we believe it's a win-win-win-win-win situation, and we, therefore, ask you to continue your strong support for the pilot project, and that you continue to monitor it closely, and that you recommend its continued funding for the entire five years.

Thank you.

[The prepared statement of Mr. Terhune follows:]

Testimony of
George Terhune, member of the Quincy Library Group Steering Committee
before the
House Committee on Resources, Subcommittee on Forests and Forest Health.

Redding, California, August 30, 1999.

Chairman Chenoweth and Members of the Committee,

I have the honor of submitting written testimony that represents the combined input of the members of our Pilot Project Consultation Committee on behalf of the Quincy Library Group. My verbal statement will summarize and perhaps give additional emphasis to the main points of this written statement.

The two processes of greatest current interest for QLG are successful implementation of the Herger-Feinstein QLG Forest Recovery Act through the Pilot Project established by that Act, and a reasonable outcome of the Sierra Nevada Forest Plan Amendment EIS now being developed by Region 5 in the Sierra Nevada Conservation Framework

Regarding the Pilot Project, we first want to express our profound gratitude and admiration to Mr. Herger and his staff, to Senator Feinstein and her staff, and to this Committee and its staff, for their continuous rock-solid support during the two and a half years it took to enact the legislation and obtain a Forest Service decision to implement it.

At the risk of being unfair to other staff members, we wish to single out Duane Gibson, of the Resources Committee staff, for our particular thanks. Duane was in on this at the beginning, and he has never wavered in his readiness and ability to answer our questions and to suggest appropriate responses to the many roadblocks and detours that appeared along the way.

Within the last few months Mr. Herger, his staff, and Committee staff were directly involved in crucial discussions, without which no alternative in the Draft EIS would have represented both the Act as written and Congressional intent for its implementation. The result of those discussions was that the Forest Service made a small but essential revision to Alternative 2, so that it would conform to both the text of the Act and the clearly expressed expectation of the Senate Committee on Energy and Natural Resources, that no scheduled timber harvest or road building would occur in late-successional old growth stands, wherever they were encountered during implementation of the Pilot Project.

Then within the last few weeks Senator Feinstein and her staff made heroic efforts to keep Alternative 2 alive, with the result that it was eventually adopted in a form that we believe provides an acceptable implementation of the Act as intended by Congress.

The Record of Decision adopts Alternative 2 in a version that very nearly implements all provisions of the Act. QLG supports this decision and will work diligently to help assure its successful implementation. The Final Environmental Impact Statement (FEIS) was a great improvement over the Draft EIS, in that the FEIS adds Chapter 6, "Monitoring Strategy," which is an indispensable element of any pilot project, but was missing from the Draft EIS.

However, we must also point out that this was a good decision reached by some questionable processes that need to be corrected. Much of my testimony will deal with aspects of the EIS process that we think merit the attention of this Committee as you oversee implementation of the Pilot Project and other Forest Service programs.

Problems with the EIS.

1. The first problem with the HFQLG EIS process was very inefficient time management. It took the Forest Service about 60 days just to publish a Notice of Intent. It is not as if the Pilot Project jumped up unexpectedly at the last minute. Its major provisions had been clearly defined in the House version of the bill for at least a year and a half before the Act became law. After the NOI was published, public meetings were held, but for months it seemed to us they were structured more to avoid problem-solving processes than to engage in them. If better use had been made of opportunities for real consultation with the public, with QLG, with other interested parties, and with experts in the various fields of interest, we believe some of the last minute scrambling to deal with major problems could have been avoided. For example, very early in the process QLG requested the Forest Service to cooperate in setting up seminars or workshops with prominent scientists and other specialists, but the Forest Service expressed little interest and claimed it had no capability to be involved in that endeavor. Review of the Draft EIS by experts outside the EIS team, and by other agencies such as the Fish and Wildlife Service, did not seem to take place until very late in the process. When they did take place, the reviews we are aware of seemed to have been so rushed by earlier delays and the impending deadline that reviewers sometimes showed insufficient familiarity with all pertinent information.

2. We do not believe the Forest Service made good use of other expert help that was available to it. For example, there is a well-established body of expertise, referenced in the Sierra Nevada Ecosystem Project (SNEP) report and elsewhere, on the modeling of fire effects and changes in fire behavior in response to different fuel conditions in forest land. However, the work of only one person was actually referenced and used in the DEIS analysis of fire effects. That work consisted of just two computer simulations. One of them was with relatively small fires on "artificial" flat terrain with uniform fuel loading and without any suppression attempted. The other simulation was done on "real" terrain, but again without any suppression attempted. This second exercise was with somewhat larger fires (still only about 7,000 acres maximum), but only one of the locations produced results the experimenter thought were significant. The net result was that virtually all conclusions in the EIS regarding the strategic advantage of one fuel treatment pattern over another were based either on too-small fires on artificial terrain, or on one run of one computer simulation for each of the two treatment patterns being evaluated, at about one-third the significant fire size and without any effect on suppression capability being considered.

3. Many of the other resource management planning models that were used to analyze and evaluate potential environmental consequences in the DEIS seem inappropriately applied to the pilot project. The models for predicting air pollution emissions from prescribed burns, for visual

quality impacts, and cumulative watershed effects were originally developed to evaluate intensive, even-aged timber management schemes. Judging by the mitigations suggested (spring burning, burning in piles, "Oregon curtain" view strips along roads, etc.), it seems clear that the analytical models used in the DEIS were not integrated well enough to consider the ecological consequences of employing single-minded mitigation measures. Furthermore, these models were inappropriately applied in that all of them seemed to presume that "disturbance" of any sort would be inherently adverse -- an inaccurate and inappropriate assumption for the QLG area's fire-adapted forest ecosystems. Even where an analysis showed beneficial effects of an activity, such as with the rebuilding or relocation of roads and the maintenance or roads, these activities were lumped together with new road building, and labeled simply "disturbance." There was no distinction between building new roads and relocating badly designed old roads; they were evaluated as equally "disturbing" and described as an adverse effect. As a result of employing obsolete models and evaluating them badly, both the Draft EIS and the Final EIS missed chances to consider and employ comprehensive, ecologically sound management solutions.

4. Forest Service methods for evaluating management success are outdated and inappropriately applied. Accomplishments continue to be reported largely in board feet of lumber output. Cumulative watershed effects are considered and reported largely in terms of Equivalent Roaded Acres, a measure that never was very good, is even less useful now, and in any case has not been properly applied and updated even it its own terms. An assumption was made that Pilot Project activity would require the same amount of new road construction that historically was done to support conventional logging. That assumption is not consistent with the fact that the Pilot Project will be implemented on areas already heavily roaded, and that the Defensible Fuel Profile Zones (DFPZs) specified in the Act will almost entirely be constructed along existing roads.

The effect of continuing to employ obsolete concepts and methods showed up most clearly at the very end of the EIS process, when every other consideration was over-shadowed by narrowly defined differences in spotted owl guidelines. At every opportunity, Forest Service experts deplore "single species management," but Forest Service managers could not seem to find any other concept to guide their decision making.

5. A significant change was made between the version of Alternative 2 presented in the Draft EIS and the version adopted in the Record of Decision. The Act specifically requires the Pilot Project to comply with the California Spotted Owl Sierran Province Interim Guidelines (CASPO Guidelines) or the subsequently issued guidelines, whichever are in effect. The Record of Decision drops that requirement of the Act, and substitutes a site-specific mitigation, which says that Pilot Project activities "...will be designed and implemented to completely avoid suitable California spotted owl habitat, including nesting habitat and foraging habitat." QLG believes it would have been preferable to implement the CASPO Guidelines as required by the act, and that the mitigation substituted for the CASPO Guidelines is very likely to introduce problems, because:
(1) Neither the Record of Decision nor the Final EIS provides definitions of "suitable California spotted owl habitat," "nesting habitat," or "foraging habitat." [moving target]
(2) The wording of the mitigation implies that additional habitat, other than nesting and foraging habitat, must be avoided, which we do not believe is the sense intended, nor was it the sense of earlier drafts of this concept that were floated in a different context, and in any case such an

interpretation would not be justified.
(3) This whole section of the Record of Decision implies, incorrectly we believe, that it is a viable management strategy to stay completely out of all habitat that a spotted owl might use, whether nesting or foraging or neither.

At the very least, definitions of "suitable nesting habitat" and "suitable foraging habitat"should be provided, and the mitigation should be changed to read "At the site-specific project level, defensible fuel profile zones, group selection harvest areas, and individual tree selection harvest areas will be designed and implemented to completely avoid suitable California spotted owl nesting and foraging habitat."

6. The Record of Decision includes a new provision not contemplated in the Draft EIS. "Limited operating periods would be applied to unsurveyed habitat considered to be suitable for threatened, endangered, or sensitive species; and to habitat considered suitable for any species for which viability may be a concern." In our view that is a vast unwarranted expansion of the limited operating period (LOP) concept, which was not properly noticed to the public, is not supported by science, and is not clearly enough defined to be acceptable forest management direction. "Applied to unsurveyed habitat" could be interpreted to mean that large areas should be placed off limits to management for much of the working season, whether or not it was ever actually used by the wildlife in question. Applying this provision to "habitat considered to be suitable for any species for which viability may be a concern" is an open-ended license, either for the Forest Service to shut down all management anywhere, or for opponents of the Pilot Project to appeal and litigate all individual projects everywhere.

Below is a copy of Table 2.3 (pg 2-8) from the Final EIS.

Species	**Location**	**Limited Operating Period**
Bald eagle	Within designated territories	November 1 through August 31
Bald eagle	Winter roosts	November 1 through March 1
Peregrine falcon	Within designated territories	February 1 through August 31
California spotted owl	Within 1/4 mile of PAC boundary	March 1 through August 31
Goshawk	Within 1/4 mile of territory	March 1 through September 15
Marten den	Within 1/2 mile of known sites	May 1 through August 1
Fisher den	Within 1/2 mile of known sites	March 1 through July 1
Wolverine den	Within 1/2 mile of known sites	February 1 through June 1
Sierra Nevada red fox dens	Within 1/2 mile of known sites	February 1 through July 1
Sandhill crane	Within 1/2 mile of known sites	April 1 through August 1
Great gray owl	Within 1/2 mile of known sites	March 1 through August 31

The Sierra Nevada Conservation Framework and Forest Plan Amendment EIS.

While QLG has necessarily put its greatest effort into seeing that the HFQLG Pilot Project is properly initiated, we have also participated in every aspect of the Conservation Framework to date. We responded when the Sierra Nevada Science Review was first published over a year ago, we responded again to the Notice of Intent for the Forest Plan Amendment EIS, we have participated in numerous public meetings at local and regional levels regarding development of the EIS, and we will certainly respond in detail to the Draft EIS when it is published. We believe that the HFQLG Act has already produced its first useful results, in that several issues of regional interest have been given sharper focus by the necessity to deal with them in the Pilot Project EIS. Among these issues are strategic fuel reduction for improved fire protection, protection and long term regeneration of old growth forest, riparian area protection and restoration for improved aquarian habitat and water quality, and sustained yield of benefits specified by law and regulation, such as forest-related products, recreation, and other aesthetic values.

Over all is the urgent need to integrate these issues in a management plan that addresses the major forest health and community stability problems at appropriate scope, scale, and pace. We do not claim that the HFQLG project should simply be replicated at regional scale, but we do believe that the issues of priority, scope, scale, and pace must be addressed in the Sierra Nevada Forest Plan Amendment EIS, and we will attempt to inject those issues into the Regional effort at every opportunity.

Was the Act necessary?

This question arose when the QLG Bill was first introduced by Mr. Herger, and it has been raised numerous times since then: Was it necessary to have the HFQLG Act, or could the QLG Proposal (or some equivalent pilot project) have been implemented adequately through administrative action alone, under pre-existing law?

The short answer is that *in theory* an equivalent pilot project could have been implemented under pre-existing law, but *in practice* it never would have happened. As evidence of that, we simply point to the great difficulty that we and Mr. Herger and Senator Feinstein and Congressional staff have had in persuading the Forest Service just to specify and then decide upon an alternative that would actually implement the Act as written, (or at least very nearly as written), with regard for the clearly expressed Congressional intent as to how it should be done.

In reporting the HFQLG Bill with a "do pass" recommendation, the Senate Committee on Energy and Natural Resources said "...legislation should not be necessary to accommodate thoughtful consensus-based approaches to Federal land management..." QLG agrees with that theory, but has found in practice that the Forest Service bureaucracy does not -- perhaps can not -- respond to such approaches, and in fact responds only reluctantly when there is directive legislation. Therefore we believe Congress should reconsider the conclusion of the Senate committee, that "Therefore the committee does not anticipate reporting any additional legislation initiative comparable to the Quincy Library Bill." Instead of foreclosing other initiatives or waiting five years for the HFQLG results to be known, we believe that other such initiatives should be considered on their own merits, and if further instances are found where new approaches are necessary but cannot be implemented by standard Forest Service procedures, that would be very good evidence that those procedures need to be updated and reformed at their roots.

Continued Congressional Oversight and Support.

QLG is very encouraged by the variety and depth of support for the Pilot Project, and we wish particularly to thank you for the Committee's continued interest, as shown by your hearing today. We have criticized, we believe with good reason, some aspects of how the Forest Service has handled the EIS and Record of Decision to date. Nevertheless, we believe the correct decision has been made and should be implemented. Your oversight of this Pilot Project will be a vital factor in its potential for success.

We saved perhaps the most important subject for last. The Pilot Project cannot succeed unless it also continues to be supported by earmarked funding to carry it out in full. The FEIS shows that implementation of the Pilot Project under Alternative 2 will greatly improve the ratio of Federal revenue to Federal cost, and hugely increase both direct and secondary economic activity in the QLG Area. Another panelist will describe those benefits in greater detail.

Considering the direct and indirect economic benefits to both the Federal treasury and local economies, the reduction in fire hazard, the improvements in forest health, and the opportunity to conduct a pilot project that will give us previously unavailable information of great value for improving forest management elsewhere in the nation, we believe this is a win-win-win-win-win opportunity. We therefore ask that you continue your strong support for the Pilot Project, that you continue to monitor it closely, and that you recommend its continued funding for the entire five years.

TITLE IV

THE HERGER-FEINSTEIN QUINCY LIBRARY GROUP FOREST RECOVERY ACT

Herger-Feinstein Quincy Library Group Forest Recovery Act.
16 USC 2104 note.

SEC. 401. PILOT PROJECT FOR PLUMAS, LASSEN, AND TAHOE NATIONAL FORESTS TO IMPLEMENT QUINCY LIBRARY GROUP PROPOSAL. (a) DEFINITION.—For purposes of this section, the term "Quincy Library Group-Community Stability Proposal" means the agreement by a coalition of representatives of fisheries, timber, environmental, county government, citizen groups, and local communities that formed in northern California to develop a resource management program that promotes ecologic and economic health for certain Federal lands and communities in the Sierra Nevada area. Such proposal includes the map entitled "QUINCY LIBRARY GROUP Community Stability Proposal", dated October 12, 1993, and prepared by VESTRA Resources of Redding, California.

(b) PILOT PROJECT REQUIRED.—

(1) PILOT PROJECT AND PURPOSE.—The Secretary of Agriculture (in this section referred to as the "Secretary"), acting through the Forest Service and after completion of an environmental impact statement (a record of decision for which shall be adopted within 300 days), shall conduct a pilot project on the Federal lands described in paragraph (2) to implement and demonstrate the effectiveness of the resource management activities described in subsection (d) and the other requirements of this section, as recommended in the Quincy Library Group-Community Stability Proposal.

(2) PILOT PROJECT AREA.—The Secretary shall conduct the pilot project on the Federal lands within Plumas National Forest, Lassen National Forest, and the Sierraville Ranger District of Tahoe National Forest in the State of California designated as "Available for Group Selection" on the map entitled "QUINCY LIBRARY GROUP Community Stability Proposal", dated October 12, 1993 (in this section referred to as the "pilot project area"). Such map shall be on file and available for inspection in the appropriate offices of the Forest Service.

Mrs. CHENOWETH. Thank you, Mr. Terhune.

I want to thank both of the witnesses for your outstanding testimony—very informative, very good.

Now the Chair recognizes Congressman Herger for his questions.

Mr. HERGER. Thank you, Madam Chairman.

Mr. Jackson, environmental groups have criticized your QLG plan and the QLG bill. They say it is bad for the environment. What is your reaction or response to this charge?

Mr. JACKSON. They are wrong. Basically, the environmental movement has been right many, many times in the past and has provided a great service for the people of the United States in acquainting us to the problems that we face. But they are not very good at solutions. And it is time to move past problem identification in the solution building.

In your district, as you know better than I, to 80 percent of the people want to take care of the environment, but only 20 to 25 percent of the people would let anybody label them an environmentalist. And that is the distinction—is the solutions are about including everybody in the United States. The movement is about dividing everybody in the United States.

And so it is time for some of us in the movement to step up and say that it is time to learn from everyone, and it is time to share information with everyone, and it is time to get on with real solutions. And I do believe that this has been instructive for the environmental movement.

The normal demonizing that takes place when you disagree with the movement didn't work here, and it didn't work because the substance of the program was so good. And so I see this as very hopeful, and I believe that over time my environmental friends will be more interested in solutions than in simply advertising and propaganda.

Mr. HERGER. Thank you. I really believe what you have just stated is what literally makes this so historic in what we are doing. But I would like to follow this line of questioning just a little further, if I could, and would like to seek your reaction or response to the following allegations against the QLG. And we have read this in the media over and over again—a number of these—and again I would like your response if we could.

The first one is that the QLG plan doubles logging.

Mr. JACKSON. The answer to that, as you well know, Congressman Herger, is from what base do we determine that it doubles logging? When I began to work in the environmental movement, the logging on the forests involved here was about 460 million board feet a year. This will be somewhere between 200 and 285.

The logging done in this program is completely different than the logging done in the 1980s when we clear cut all trees as the appropriate method, according to the Forest Service. That is all that they gave the loggers was clear cutting all trees.

This particular program is designed to improve habitat and to improve fire risk. So basically, I would say that this program is slightly less than what it ought to be over the next 40 years. But the idea that it doubles logging, you would have to use the numbers from a level that is in everybody's mind far too little to come up with the idea that this program doubled something.

You can look at it either way. It is either 60 percent of what it used to be or more than the lowest level ever reached in history. But we don't think that the number is important. If we do the right thing on each acre of land, the number will take care of itself.

Mr. HERGER. Thank you. The next allegation: the QLG bill was passed as a rider.

[Laughter.]

Mr. JACKSON. As you know, Congressman, we had a healthy debate on the floor of the United States House of Representatives. We had a healthy debate in this Committee and in Congressman Young's full Committee. And George Miller, in both cases, did a magnificent job debating his position and his allies' position. And then we reached agreement between Congressman Young and Congressman Miller, and the vote was 429.

And we had 100 votes in the Senate. We won in the Senate Committee 11 to 0. And then my environmental friends began to play the games at which they are so capable, and we ended up with mysterious holes on our bill, and we sat in the Senate for almost a year. And if it had been brought up for a vote at any time within that year, we would have had at least 95 of the 100 Senate votes.

And because the Democrats, a few Democrats, played a very fine procedural game, we did, too. And we picked a bill that it was clear would have to be passed. And we went to the leadership in both parties, and the leadership in both parties—every single leader had us on their list in both parties.

And I would like at this point to tell you that we would not have had that kind of skill to enable us to get around the procedural hurdles, if we were not led by a man who probably did more than any single human being to help us through the thicket in Washington. And he sits right there beside the two of you Congresspeople today, Duane Gibson, and I want to thank him for what he did to help us know how to handle Washington procedure.

[Applause.]

Mr. HERGER. For those of you who aren't aware of whether—and understand what Mr. Michael Jackson is referring to, a great staff person, Duane Gibson, who has worked so well. All of us know we are only as good as the people we have working with us, and we certainly have outstanding staff in Duane.

I want to thank you, and thank you for acknowledging that.

Also, just to mention that every single Democrat in the House of Representatives, including George Miller, voted for this when it was before the House.

Mr. JACKSON. I would also like to point out that because we are a stickler for procedure that one of the first people in the United States Senate to vote for our bill was Senator Barbara Boxer.

Mr. HERGER. The next allegation: the QLG bill is a hidden subsidy for logging corporations.

Mr. JACKSON. One of the things that has disturbed me in the years I have been an environmentalist is this question of corporations as somehow a bad word, and subsidy as somehow wrong when it is applied to a corporation. I have heard regularly about Sierra Pacific and Sierra Pacific's role in the Library Group, and they have been wonderful in the Library Group, along with the other companies—Collins Pine, Big Valley Lumber, Birney Forest

Product. They have all worked quite well with the rest of us, and they have been very, very fair.

One of the problems that I have is that I was raised a liberal, and so I am kind of a watermelon. I am a little green on the outside and kind of pink on the inside. And I think some of my friends have lost the social argument, and this is one of the last places where we still talk a lot about capitalists and monopolists and all of those non-environmental words.

And so I try to keep my politics and my environmental views separate, and I wish my friends in the environmental movement would do that. This is not a subsidy. This will pay for itself. It will pay for itself in terms of market prices, and it will pay for itself in terms of improvement in the ecology.

So, basically, I am a little tired of hearing about monopoly practices in the forest when I have to go to computers that are run by Bill Gates. And if we are all going to worry about monopolies in this country, let us start with Windows——

[Laughter.]

——[continuing] because they are much more effective and much more powerful than anybody in the timber industry.

Mr. HERGER. Thank you. And then, if you could respond to this quote. We have read this in virtually all of the national newspapers and locally. "Congress and local counties seem to feel the best way to subsidize industry is to cut down public forests. I think it is just indicative of the fact that the only way the United States Forest Service can get increases in logging approved is circumventing real democracy."

Mr. JACKSON. Well, I don't know how you circumvent real democracy. When you develop something at a local level, you go through the House of Representatives, you go through the United States Senate, and you have the President sign the bill. And then you go through the National Environmental Policy Act, and you have a good strong view taken of the viability standard and the potential of an endangered species.

When you do all of that, it is really hard to think that you should give any credence whatsoever to the idea that we circumvented democracy. Congress is the democracy. The House of Representatives is the people's house.

And consequently, the idea that somehow it is more democratic for a group of us who have legal skills to intervene in every activity of the Congress, every activity of the agencies with litigation, and that that somehow is democratic, and the process we took step by step through the bill process is anti-democratic, seems to me to make one wonder whether the urban elite universities are still as good as they used to be.

Mr. HERGER. Thank you. And finally, in this line of questioning, if you could tell us about CASPO, the California spotted owl, requirements as they relate to QLG EIS, and when do they apply?

Mr. JACKSON. The California spotted owl rules basically take what we know in terms of the science and apply it in as efficient a way as you can, given the uncertainty. They require that you not log any tree bigger than 30 inches dbh until it is clear what suitable habitat for the spotted owl and other old growth species really is.

We believe that that is a good rule because we know we need big trees, we know we need big down material in the forests, but we know very little else for sure. So the CASPO rules are a reasonable approach given the uncertainty, and we intend to obey them.

In the last days of the Library Group program, it became clear that there may be some new science about suitability of habitat. We do not want to avoid new science, but we want to make sure that the new science is an improvement on the old science before it gets applied to us. So we will monitor the new science in the framework document which is being prepared.

When I started—after I had moved from Redding in 1977 to Quincy, and began to look at the question of habitat, it became clear to me in 1977 that we didn't know exactly what suitable owl habitat was. As I sit here in 1999, having read every document and gone to almost every meeting, I still don't know what suitable habitat is.

So I think that the Library Group approach is exactly the right approach to take, given the uncertainty. It is conservative and cautious, but it is activity and not the zero cut that some of the folks in the environmental movement want for policy reasons.

Mr. HERGER. Thank you.

Madam Chairman, I yield back to you.

Mrs. CHENOWETH. Thank you, Mr. Herger.

I want to address this question to Ms. Blum. I am going to read to you from Public Law 105-277, which is the compliance section for the spotted owl. I want to read this into the record.

"All resource management activities required by subsection D shall be implemented to the extent consistent with applicable Federal law and the standards and guidelines for the conservation of the California spotted owl as set forth in the California spotted owl Sierra interim guidelines, or the subsequently issued guidelines, whichever are in effect."

[The information follows:]

Mrs. CHENOWETH. Now, this is the law relative to owl guidelines. Now, the Forest Service chose not to enter the owl habitat at all, instead of following the law. Now, I want to know, Ms. Blum, what your thoughts are for the record on that decision.

Ms. BLUM. I think the rules of the game got changed on us, and I think the rules are being changed, as Mike Jackson referred to, on the basis of some "new science" that hasn't been written up and published yet. It hasn't been subjected to scientific rigor and the normal kinds of debate, replication, and testing that is the hallmark of the scientific method.

Instead what we had was—inexplicably to us, I might add—literally after the draft EIS for the QLG project was released for public review, we heard about closed meetings among agency scientists at which they held discussions, and other agency scientists took those conversations as the "new science" and then attempted, in the last 60 days or so, to translate that into new science that would replace the California spotted owl interim guidelines.

It seems ironic to me that when we began this back—and actually wrote up our community stability proposal and submitted it to the Forest Service -in 1993, it was a really big deal to have everybody say, "Look, the CASPO interim guidelines are the rule. That is what we have to go with. We want to abide by them. We don't want to try to find loopholes in every instance and sort of push the envelope every time."

At the time, the political climate was one in which the environmental movement was afraid that Congress would slap sufficiency language on everything, that agency actions would be governed by "these laws, notwithstanding," the kinds of language. We wanted to go by the book. We naively at that time thought that the environmental movement would respect that adherence to rule and adherence to legal and scientific process.

That has, unfortunately, not been our experience this summer. The environmentalists waited until the public comment period had begun on the draft EIS before they brought forth a whole raft of "new information" about the way timber sales and other land disturbing projects had been implemented by the Forest Service over the last seven to 10 years.

I don't personally believe that that information came to light after May of 1999. I think that they were building it for a long time, and I believe that they timed it to have the agencies go into a tizzy during the public comment period of trying to figure out how to avoid yet another species crisis under the Endangered Species Act.

And so we arrived at this place this summer where the Quincy Library Group, as a group, and the law that was passed by Congress all say, "We will implement these until these CASPO interim guidelines are replaced following the process set up by law."

And instead, we had the agency people working in the back rooms, trying to negotiate new management prescriptions, new standards of judgment about whether—the extent of effects that can be tolerated under any management scheme, and we sort of arrived rocking and rolling at the last minute to cross the finish line and sign the record of decision.

I still firmly believe—I have a reputation for hanging tightly onto the National Environmental Policy Act. I still believe very, very strongly in the scientific process. I believe very strongly in the legal process. I think it protects all of us and all of our interests as citizens to observe those processes.

What the real science is, what the true status of the California spotted owl is in the Sierra Nevada is still something that hasn't really been determined; there are a lot of questions. There are many, many ecological questions that haven't even begun to be discussed and debated publicly. There is a lot of research yet to be done, and yet we know enough to get started.

And I think that is where the Quincy Library Group has been, is we had hoped in this process to have whatever new science was out there brought forward, but that it would be subjected to rigor, public disclosure, and discussion. Hopefully, we can find a better way to move forward with this, both in the Framework and during the pilot project implementation.

Mrs. CHENOWETH. It may surprise you, Ms. Blum, but I am one that likes to adhere very closely to NEPA, too, and for the very reasons that you have brought out in your comments.

Ms. BLUM. It works.

Mrs. CHENOWETH. It works. And although it is cumbersome and slow, it is—has been the one framework that has brought our thinking together. And the fact is that today we find ourselves trying to reach solutions without the rule of law.

Ms. BLUM. Exactly.

Mrs. CHENOWETH. And the Quincy Library Group legislation served as the rule of law, and yet we find that we still have situations where people are operating outside the rule of law. So there is no way we can come together in our thinking because it is too uncertain, as you have said.

This kind of intellectual and scientific dishonesty not only destroys communities but the very environment and the very force of wildlife populations, wildlife habitat, watershed stability, the quality of streams. It destroys these very things we are all working for.

So I am so impressed with your comments. They needed to be said. And we together—lawmakers, citizens—need to require accountability and require that we operate under the rule of law. We may not always think alike within our own frame of reference, but we have the rule of law to come together under. So thank you very, very much.

I wanted to also turn to Mr. Terhune. You just thought you were getting out of a lot of questions, didn't you?

Mr. TERHUNE. I have been quiet as a mouse here.

[Laughter.]

Mrs. CHENOWETH. I wanted to ask you, did the QLG plan or the QLG EIS deal at all with time restrictions on entry for fuel break construction concerning sensitive species? And you also mentioned in your opening statements about the frog, this little frog, the red-legged frog. Is that listed as a sensitive species or a threatened species or endangered?

Mr. MURPHY. Endangered.

Mrs. CHENOWETH. It is? Okay.

Mr. TERHUNE. It has been for some time.

Mrs. CHENOWETH. Okay. Please proceed.

Mr. TERHUNE. I am not sure that—the timing of the—the first question had to do with the timing.

Mrs. CHENOWETH. Did the QLG plan or the QLG EIS deal at all with time restrictions on entry fuel break construction concerning the sensitive species?

Mr. TERHUNE. Oh, I see. Yes. Well, in the limited operating periods, it would have that effect. On that, the two that I mentioned, the limited operating period would put—in some cases, if a species is found, it imposes a limited operating period. That could be a severe restriction because many of those operating periods span time when it is possible to get into those areas to work. A lot of it occurs during the summer period. So there would be some restrictions there, although we don't believe those would, for the most part, impose very much difficulty.

The difficulty with the one I mentioned, with the red-legged frog, is the uncertainty of the process more than anything else. It looks like it would be possible, not necessarily that it would occur, but it would be possible to use that language to insist on some rather onerous requirements for survey and proof that an almost non-existent frog is not there. It is pretty difficult to do sometimes.

So there are concerns there. I mentioned those potential difficulties because they seem to be introduced with this and brought forward in the final environmental impact statement and the record of decision in a way that wasn't included in the draft EIS. And it seemed to be making a point about it, not the continuation of existing procedures, but something new to the process, and that is the worrisome part.

Mrs. CHENOWETH. Mr. Murphy, I noticed you referring to either the plan or the ROD.

Mr. MURPHY. Sure.

Mrs. CHENOWETH. Do you have anything to add?

Mr. MURPHY. Specifically, Mrs. Chairman, that the particular wording that came in the ROD really has no justification and is of concern to us. It says, "Limited operating periods will be applied to unsurveyed habitat considered to be suitable for threatened, endangered, or sensitive species." That is fine.

Then it says, "And to habitat considered suitable for any species for which viability may be a concern." What we have done is just in that one sentence included the problem that Judge Dwyer is dealing with in the northern forest plan, which was this open-ended, undeterminable list that anyone can then say, "Well, there is a viability concern for deer," and we have to then stop until we survey for deer.

So there is this strangely worded opening that we feel has the potential to undermine the entire process. And I think that the pressing need for the starting and going forward and implementing the proposal without those worries in hand is made very evident by the existing map of what is going on right now. And I will just put it up really quickly.

Mrs. CHENOWETH. Please do.

Mr. MURPHY. (Whereupon, Mr. Murphy used a defective lapel mike during the use of a map exhibit, reulting in the loss of a one minute and 32 second segment of his presentation.)

Mrs. CHENOWETH. And is today the first day that we have had winds?

Mr. MURPHY. Today is the first day in a week that we have had the wind.

Mrs. CHENOWETH. I wanted to ask you, Mr. Murphy, about fire modeling with regard to the new EIS and the ROD.

Mr. MURPHY. Well, thank you for that opportunity. That map is part of what we—the record of decision and the EIS process has gone through a very detailed section on fire modeling efforts. The Library Group was concerned after the SNEP project, which is the Sierra Nevada Ecosystem Project, that came out just preceding it—it has a whole section on fire, particularly large, catastrophic fires.

And we have here the map showing the two known large, catastrophic fires surrounding the area that we are talking about. And, in particular, the one in the southeast corner stopped when it ran into the desert. It is the lowest fuel loading area of the forest. In fact, if anything, there is a mountain between those two fires of increasing fuel.

And the modeling that was done basically decided in our EIS that fires end, or at least the modeling ended, at the end of 24 hours, and that no fire has exceeded 7,500 acres in size.

Now, in light of a 44,000-acre fire on the land base, a 64,000-acre fire sitting adjacent to the land base, and six states—that is those two fires burned in a total of six burning periods—it is incongruous to us to understand why that level of analysis didn't include the potential for large, catastrophic fire.

And so if that analysis had been done, and if the models aren't supportive of doing that kind of analysis, the models are not capable of predicting these events, then what NEPA and the National Forest Management Act says is bring in the best experts.

Well, the best experts have just recently been convened in the Sierra Nevada Ecosystem Project, and they say the same thing—that there is a high risk of large fires, and that they recommend that the pilot project concept of defensible fuel profile zones needs to be rigorously tested and monitored. So it just seems odd that the EIS did not ever deal with this clear and present danger in terms of scale.

Mrs. CHENOWETH. That is a very good point. Do you think that a new model could be developed? What would that entail?

Mr. MURPHY. Well, I am not sure a new model necessarily. Sometimes nature, no matter how well we try to measure it, has its own way of dealing with these things. And certainly these events occur with combinations of wind and fire risk, weather, and so forth, that do not occur very often. I mean, as we see right now, we have many, many starts, and we don't have the wind. Well, the wind is coming, so, you know, the chances of this occurring are relatively low.

But the risk, the issue which we want to point out, is when it happens—and clearly, in the last seven years it has happened twice, very, very close to us—that the amount of owl habitat and other species habitat that could be lost in a single three-day event swamps all of the potential risk of what our effort would do.

And also, there is a time scale here that is really important to be brought out. A large, catastrophic wildfire takes centuries to become owl habitat again. A defensible fuel profile zone is owl habitat within—in many cases, it is owl habitat the day it is finished. But it likely is only at most five to 10 years from becoming fully suitable nesting habitat again.

And so here we are looking at this minor adjustment in habitat in currently unoccupied habitat that the normal QLG proposal would have done, whereas the ROD now avoids owl habitat altogether. But we are looking at the alternate to that is removal of that owl habitat for a better part of the next century.

Mrs. CHENOWETH. Well, your comments are so well taken. It makes me wonder—there are intelligent people inside the Forest Service, as we know—why can't they see this? There is a far greater impact in not implementing the Quincy Library plan than in just letting it exist as it is; the impact being we destroy the forests, the wildlife, the community.

Sometime we are going to have to come to grips, Congressman Herger, with what is really driving this because it isn't science, it isn't wildlife habitat, it isn't wildlife, it isn't forest health, because everything that is happening out there defies reasoning. We have highly intelligent people working in the agencies, and yet we see this kind of intellectual and scientific dishonesty still emerging that creates confusion.

There is something beyond this, and I am not able to get my hands on it.

Mr. Murphy, do you have any comments?

Mr. MURPHY. Well, I am not sure that there is an answer to that question. I think the best possible thing we can do is admit we do not know, and then, as the laws require, we go forward with a monitored pilot project of an experiment to test. And we have to test that experiment at the scale of the problem.

If the problem is anywhere from 40 to 190 million acres of the west, this million and a half acre area of an experiment is tiny in comparison, but it is absolutely crucial that we go forward with it quickly, that we have the monitoring in place so that we will know more than we know today, and we can begin to move beyond these what appear to be honest scientific disagreements.

But that is the only way I can see that we can go forward is to take carefully crafted, very restrictive controls to go forward with, and also really put in the monitoring that is necessary to be able to know those answers five years from now.

Mrs. CHENOWETH. Well, I think in part Mr. Jackson answered my question in his testimony, because until we have the decision makers in Washington, DC, and those who are speculating in academia, begin to develop a great respect for the common sense of the people on the ground, we are going to continue to have to deal with vague theories instead of scientific facts.

I want to thank all of you very much.

I want to ask Congressman Herger if you have any further questions that you would like to ask before I close the panel.

Mr. HERGER. Thank you, Madam Chair. Maybe one last, if I could, and that would be, what steps would you suggest to the Forest Service to get the project implemented quickly? And what type of schedule would you suggest for implementation? And are you consulting with the Forest Service now? Whoever would like to respond to that. Ms. Blum?

Ms. BLUM. It is the intention of Quincy Library Group Steering Committee that of course we will be available for whatever consultations. We have in the past, and we will probably do so in the future, suggest to the project manager for the Forest Service, or to other Forest Service officials, that we get together in a public sense, not just the Quincy Library Group.

It is almost like we don't want to walk into the backroom, just like we don't want anybody else to walk into the backroom. We believe that public disclosure and public discussion is probably the solidest and the most efficient way to get to a long-lasting, reasonable, legal solution for many of these resource conflicts that right now there seems to be no obvious resolution to them.

I think that we intend to participate in all of the project level planning processes within the normal public venues, probably more enthusiastically than we have bothered the Forest Service in the past. But in addition to that, we will clearly be available. We intend to continue to participate actively in the Sierra Nevada Conservation Framework planning process also.

And I think our hope is that the Forest Service will continue to work on finding ways to collaborate and cooperate with the public, which is who they serve.

Mr. HERGER. And I know this was a problem for awhile, and I want to thank the Forest Service. I did contact them and they were very good on, I understand, getting together and having meetings here in the last several months. And I want to commend the Forest Service for that.

Do you have any steps that you would suggest to the Forest Service to be able to get the project implemented quickly? Mr. Terhune?

Mr. TERHUNE. I think the key to that is that in the draft EIS and the final EIS there is analysis which is based largely on example-type things, not pinned down and not detailed enough. But the first step is to apply and take a—apply the newer concepts that have come out about the final EIS, to go back and apply them to those sketch maps, go back and apply them to the tentative distinctions that were made on where might be the best place to implement this.

And one thing that has to be done, if we are going to avoid that habitat, is now in the mitigation and constructing the DFPZs. The obvious way to do it is to take another look at those maps, see where those DFPZs might be better located, to avoid the necessity for the gaps in the DFPZ system, to make it continuous, to make it effective, and at the same time do the best possible job of avoiding the habitat that is the problem.

Those are the problems I think that are immediately to be worked on, and it is—in a sense, it is a fortunate timing here because that is the kind of thing we can work on, that they can work on in this rest of the summer, in the fall, and have some good projects actually ready to hit the ground in the following season.

The first thing we should be doing, I believe, is taking another close look at criteria for how are we going to decide where these projects should go, make sure that it gets off the ground in a good, solid way—at that stage. That will give us the best possible protection from successful attack in appeals and in litigation.

So it is crucial that in the next month or so when we get the information, where are those—how should those maps be drawn? That is the kind of thing that can very well be discussed and indicated in the immediate future, but put a very solid foundation for the rest of the project.

Mr. HERGER. You're hitting on this a bit here, but also my question is, what type of schedule would you suggest for implementation?

Did you have a comment?

Mr. JACKSON. Yes, I did. I think it is absolutely critical that we get across the question of pace. In our county, the average fire cycle is between seven and 12 years. This project was designed to be actually slower than that, more conservative than that. The way it could fail is if we don't do it at a pace that would be necessary to effect the landscape.

And I guess what I'm saying is this question of uncertainty, a doctor has it every time he sees a cut. But because he is uncertain doesn't mean that he only does three stitches and leaves the rest of it open. This project is designed to go forward at a pace necessary to deal with the scale of the landscape.

If in the first year we don't reach the 40- to 60,000 number, it will be a sign that the Forest Service is not giving a full effort. Their excuse, if they have one, will be that they don't have the funding.

So the question of pace becomes two things. Do we have the funds? And the second thing is, does the Forest Service proceed at enough of a pace to demonstrate the effectiveness of the program? And so, to us, it is all a matter of appropriate pace to deal with the scale of the problem. And in that regard, then the one and a half million acres that we are dealing with can truly serve as a model for the other 40 to 191 million that people identify as having the same set of problems.

I think anybody who has seen the Boise front during fires is well aware that this problem is not endemic only to the Northern Sierra Nevada. And for us to be useful, for Congress to have dealt with everyone's problem equally by beginning here, we need to show the pace and the landscape effect. And so a smaller project is the only way that we can finish, in my opinion.

Mr. HERGER. And I think that brings into play the absolute necessity of a continual consulting with those of you who actually put together—put the science together and the plan together specific for these three national forests. And that is really the great pleasure, the great satisfaction I have had as a member of Congress, is unlike so many pieces of legislation this isn't something we—3,000 miles away—wrote.

This is legislation that the community, all of the factions, environmental community, the wood products, everyone working together, those of you who live there put this together—why it is so crucial that we have a very regular consulting between yourselves and the Forest Service to ensure that this is implemented in the way it was intended and in the way that the Congress voted virtually unanimously, bipartisan—Republican, Democrat, conservative, the liberals, everyone—to see that it happened.

Thank you very much.

Mrs. CHENOWETH. Thank you, Mr. Herger.

I have just one final question for Mr. Terhune. And I wanted to ask you about the Grazing Committees. Have the cattlemen's concerns been met? And is there some way to be able to bring the cattlemen into the mix that QLG plan implementation in the future does not adversely affect their operations?

Mr. TERHUNE. I am probably not the most familiar with cattlemen issues on this. But to the best of my knowledge there has been participation, and their concerns have been heard throughout the process. That doesn't mean that we purposely took on the task of settling all cattle problems between cattlemen and the Forest Service.

It meant that we attempted to keep this program at least neutral with regard to the issues involved. And we don't believe that we have done harm to the long-term interests of the cattle industry. We do hope that they will continue to be involved in implementation to take care of their interests as well as anybody should.

We are not attempting—and we believe that this legislation has been designed and specifically provides for adequate protection—full protection of the cattlemen's association and the cattlemen's interests. They will certainly continue to be heard, as they should. I don't know if they have anything to say on this.

Mrs. CHENOWETH. Mr. Jackson, do you have any comments about that?

Mr. JACKSON. Certainly. One of the most thrilling things about the Library Group program is watching the spinoffs. I went to a meeting recently of the Sierra Nevada Alliance, which is a group of grass-roots environmental folks throughout the Sierra Nevadas, and was just thrilled to sit there and listen to a joint presentation of the environmentalists and the Cattlemen's Association about how they were working out the problems, doing trail rides together, meeting with each other, working on solutions.

The cattlemen now have their own land conservancy, so that they can keep their families on the land and still handle the riparian zones in a way that provides environmental quality and a certain payment to the farmers because of—and the cattlemen because of the changes they need to make.

It is not something done by the Library Group. It is these folks' own Library Group program, and it thrills me to watch it begin to happen. And I would like to give a lot of credit to both the California Cattlemen's Association and the California environmental movement for what they are doing.

Mrs. CHENOWETH. Well, you have certainly set a fine example, and this is a great spinoff. And I am very, very pleased to hear about it.

For the record, as Chairman, I do want to say for the record my concern is that the legislation that we passed did not do damage to any use rights. And I will be watching very carefully to make sure there is no delegation of authority that has been given that may accomplish any kind of violation of anyone's property use rights.

And so I did want to say that for the record, because I do not want to see the QLG legislation used or interpreted in a manner that would do damage to any industry group or any environmental group, any of our users of our national forests.

So, again, I think it all boils down, as you have said so aptly, to an ongoing respect for the common sense of the people on the ground. And you have demonstrated something that we in the Congress have been hoping we could, and we have been your assistants, and we will continue to be your assistants as you drive the solutions home.

Thank you very much for your fine testimony. I look forward to working with you as we see the success of this program develop. Thank you.

And I call the second panel—Mr. William Stewart, Chief, Fire and Resource Assessment Program, California Department of Forestry and Fire Protection, in Sacramento, California; Ms. Fran Roudebush, Plumas County Supervisor, District 1, Quincy, California; Mr. Frank Stewart, Counties Quincy Library Group Forester, Chico, California; and Mr. Dick O'Sullivan, California Cattlemen's Association Public Lands Committee, Sacramento, California.

Mrs. CHENOWETH. I want to thank the witnesses very much for joining us here today. And as you can see, we are sort of letting the rules relax because we want to take as much time and opportunity to hear from you on the record.

As you know, it is the plan of the Chairman to place all outside witnesses under the oath, and I believe that you have been given a set of rules—the Committee rules—that address this issue. So at this time, I wonder if you might stand and raise your hand to the square, your right hand.

[Witnesses sworn.]

To begin testimony, we call on Mr. William Stewart.

STATEMENT OF WILLIAM STEWART, CHIEF, FIRE AND RESOURCE ASSESSMENT PROGRAM, CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION, SACRAMENTO

Mr. WILLIAM STEWART. Thank you, Madam Chairman, Chairman Chenoweth, and Congressman Herger. My name is William Stewart, and I am representing the California Department of Forestry and Fire Protection. Director Andrea Tuttle couldn't be here today because she is at our State Board of Forestry and Fire Protection meeting in Sacramento.

But I am, as you have heard, the Chief of the Fire and Resource Assessment Program for CDF, and we are responsible for doing the Department's analysis of the QLG activities as well as responsible for coordinating responses with the other relevant state agencies.

For all departments, I want to welcome the opportunity to provide some input, not only from CDF but also the Department of Fish and Game, as well as our Resources Agency.

A little bit of background—I have a Master's and Ph.D. in Forest Economics from one of those elite universities that Mr. Jackson so lovingly referred to, and have been involved in a number of these activities. I was a consultant for some California issues on FEMAT, have worked on one of the early California spotted owl assessments on some of the economic impacts, and was also a principal resource economist for the Sierra Nevada Ecosystem Project for about two years, up until 1996 when I joined the State.

Given that the Forest Service has made the programmatic decision to select Alternative 2 with the mitigation package, I want to direct my comments to actions we see as necessary for effective implementation of this project. Effective implementation of the project is what Congress is asking for, so that we can learn from this and not just create more studies.

My office has already reviewed large studies on the Sierra Nevada, and I personally don't want another one to have to read again. I think these comments are consistent with the record of decision, and I think the interests represented by all of the stakeholders.

We see three areas that we think are going to need to be bolstered in some ways during the implementation project. The first is a monitoring and adaptive management framework with a strong scientific basis so that we can learn from this pilot project. As we heard in the previous session, there is a lot of uncertainty.

But if we just wait and leave uncertainty as a reason to do nothing, we will never move forward on that.

Second we are dealing with a lot of fire related issues, as was pointed out earlier. When we don't have high winds in computer models, we can miss what really drives how many burnt acres we have. In our fire modeling, we have probabilities of all fires up to about 200 acres, and after that we just call them "big." We don't know how big the fire is going to be at that time, but you do have to address that fact, and there are ways beyond the standard engineering approaches that we need to address the issues of fire risk in the Northern Sierra Nevada.

I think central to that need is a more transparent fire planning process. We read nearly all of the different fire modeling for the Sierra Nevada as well as for the rest of the state. There are many different aspects and many different risk factors, and there are many different potential impacts that are all involved.

What is necessary is to continue our work with the Forest Service as well as the QLG on promoting approaches such as a California Fire Plan, which is an approach we have used before that covers all private and Federal lands, to try to bring all of the pieces together and make some decisions that makes the process move forward.

I will put in the record a copy of the Fire Plan. And just as an example, look on our web page. We have an example of the fuels that we developed with the other agencies—with the Forest Service and the BLM. The example map was a piece of the QLG area. There is a small cross-section that shows the different fuel types that can be used in modeling, so that we can all work from the same basic data and don't have one set of people using this model, someone else using this model, and someone else bringing up an anecdote, a memory from their childhood or whatever. We need some clarity and some consistency among all of the agencies and the stakeholders.

And, third, it is necessary to have integration of the economic analysis into the implementation, monitoring, and assessment. The QLG bill, as written, would take into account the economy of this area. I think in the draft EIS it is buried in the back. I think it is going to be very important to make sure we bring in a cost-effective approach toas as a pillar of a working landscape management for the forests of California.

And I just hope that can be brought in because the cost-effectiveness mandate from Congress is set forth very strongly. And we hope that that is the road we are on and we don't sit around and argue about unknown lifestyles of red-logged frogs.

I think we all agree on the value of working with locally-based processes, such as the Quincy Library Group, the importance of creating a forest landscape that is better suited for fire than the one we have created to date, and to really provide the mix the benefits of managing a national forest as working landscapes that, both produces commodity and non-commodity benefits from the national forests. I think the complexities of this issue require that we move towards a more transparent model, understanding where we are going, as opposed to the planning processes that we have now.

I think that opportunity has now begun to finish the EIS process, and I think it is important to not look at these models just to get it through the hurdles of NEPA but to actually use it to involve all of the stakeholders and learn from what we are doing.

One thing I would like to mention is that during the draft environmental impact statement, the Department of Fish and Game, in our comments that we submitted earlier, did focus on the need to predict and to monitor the potential impact on key wildlife species.

It is an ongoing issue. We weren't asking for immediate action, but rather to have a scientific approach to learn as we move along on how species are impacted, not just the California spotted owl but all of the species, not just in the National Forest but also in the DFPZ. And I think we can learn a lot and move forward on many of these things, so that after five years we have a much better understanding of how this works.

I mentioned again just some of the work on the California Fire Plan. I need to emphasize that we must utilize what we have across all of the agencies—the common information based on fuel types, fire regimes, fire models, and wildlife models. The problem is many of these models were built for specialists to use, but in this process they need to be understandable by the public and the stakeholders.

We are committed. My director has involved the resources to commit some of our scientific personnel to work with the Forest Service, to get models and information that works for all of the stakeholders.

And finally, as I mentioned before, this is a very important project for us from a regional economic point of view. There are enormous benefits described in the environmental impact statement that could come out of this. We have also looked at the harvest aspects and feel they will not harm the recreational use of the national forest, which is really the other national value here. I think these two aspects are very complementary, and I think they should be ensured that they stay that way.

Finally, I would like to just provide my appreciation for having this hearing. I want to extend the offer from Director Tuttle and her staff that we would like to work with the Forest Service, as well as the Quincy Library Group stakeholders, to move this process forward. We see this as a learning experience on how we all in California can manage both private and public forests in the west for the benefit of all.

Thank you.

Mrs. CHENOWETH. Thank you very much, Mr. Stewart.

[The information follows:]

[The prepared statement of Mr. William Stewart follows:]

STATEMENT OF WILLIAM STEWART, CHIEF, FIRE AND RESOURCE ASSESSMENT PROGRAM, CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION ON THE HERGER-FEINSTEIN QUINCY LIBRARY GROUP FOREST RECOVERY ACT ENVIRONMENTAL IMPACT STATEMENT

Dear Madam Chairman Chenoweth

My name is William Stewart and I am representing the California Department of Forestry and Fire Protection (CDF). Director Andrea Tuttle was not able to be here as she must attend the State Board of Forestry and Fire Protection meetings in Sacramento. The Fire and Resource Assessment Program of CDF was responsible for our department's analysis as well as the coordination with other relevant state departments. CDF's Fire and Resource Assessment Program is responsible for analyzing trends in the state's natural, social, and economic systems; monitoring and assessing the condition and availability of wildland resources; and identifying alternative responses to changing trends and conditions. Our mandate covers private, state owned, and Federal wildlands. Prior to joining the state I was a forest and regional economic consultant on numerous projects such as FEMAT (1993) and the Report of the Policy Implementation Planning Team to the Steering Committee for the Californian Spotted Owl Assessment (1994). From 1994 to 1996 I was the principal resource economist for the Sierra Nevada Ecosystem Project (SNEP).

The California Department of Forestry and Fire Protection welcomes the opportunity to comment on the Herger-Feinstein Quincy Library Group Forest Recovery Act now that the Final Environmental Impact Statement and Record of Decision are out. In addition to my primary task of representing CDF, I will also summarize the main points of the California Resources Agency and Department of Fish and Game that were also sent in comment letters to the U.S. Forest Service in July 1999.

I would like to reiterate the offers from Secretary for Resources Mary D. Nichols, CDF Director Andrea Tuttle, and DFG Director Robert Hight for continued technical assistance in areas of strong mutual interest.

Given that the USDA Forest Service has made the programmatic decision of selecting Alternative 2 with a mitigation package, I will direct my comments towards actions we see as necessary for effective implementation of a project that will have significant positive impact on fire risk, forest management, and economic vitality in the region. Overall, we see to strengthen three areas of the project:

- A monitoring and adaptive management framework with a strong scientific basis so that we can learn from the pilot project.
- A more transparent fire planning process similar to the California Fire Plan that combines the numerous assets, fire risk factors, and potential impacts of fuels treatments to guide implementation and assessment of site specific projects
- A greater integration of economic analysis into the implementation, monitoring, and assessment of individual projects to meet the cost-effective mandate of the Act.

We agree on the value of working with locally based processes, the importance of creating a forest landscape better suited for fire, and the benefits of managing national forests as working landscapes that produce a sustainable mix of commodity and non-commodity resources. The complexity of the issues requires a planning tool that can effectively integrate the different issues for different stages of the process (strategic planning, implementation, and monitoring) as well as for different users (analysts, implementers, and stakeholders). More specifically, we proposed that the USFS use a rigorous, scientific process, such as or similar to the California Fire Plan, for identifying areas with the greatest assets at risk to fire, areas with hazardous fuels accumulations, areas prone to severe fire weather, and areas where an unacceptable number of fires have escaped initial attack. A more thorough description of the California Fire Plan can be viewed on our web sites *(hftp://frap. cdf.ca. gov/fire-plan/, http://www.firesafecouncil.orgfirgplan.html),* and *http://frap.cdf ca.gov/data/fire data/hazard/mainftames.html.*

Apply Adaptive Management

Our earlier comments stressed that, to be meaningful, the pilot project should apply a range of fuel management and silvicultural treatments and carefully monitor them over time for the achievement of desired outcomes. A cost-effective, statistically-based sampling system that measures the cause and effect relationships of different management activities is necessary to ensure that the pilot project is a productive learning and demonstration experience as Congress has indicated it to be. Without the collection and analysis of monitoring data, applying one or two treatments (reserves being a type of treatment) across a varying landscape for five years will provide limited insight into sustainable forest management. The scientific review panel called for in the HFQLG Act could be used to ensure that treatment approaches and monitoring results allow for this learning. CDF is willing to provide some of our professional staff to the scientific review panel.

The technical details in terms of harvest units, standards for important habitat components at the forest stand level, layout of defensible fuel profile zones (DFPZs) in terms of linear or area design, how they interact with riparian systems, prioritization based on effectiveness of reducing probability of catastrophic fire losses, etc., will all require further refinement beforehand and rapid feedback during adaptive management. An adaptive management approach should be used to provide for the collection of critical monitoring data and the alteration (of kind, scope, or placement) of management activities needed to avoid adverse environmental impacts or other violations of Federal law.

Monitoring and Adaptive Management

Monitoring efforts will be crucial if we all are to learn from this effort. It should include post-project compliance and effectiveness monitoring. Compliance and effectiveness monitoring should be designed to inform an adaptive management process. The Department of Forestry and Fire Protection and USFS State and Private Forestry have successfully collaborated on the development of change detection methods for vegetation canopy cover that could inform a monitoring and adaptive management effort. *(htty://fray.cdf ca.gov/projects/change detection/change detection projecthtml)*

The analysis of the alternatives does not disclose the longer-term impacts of the proposed vegetation treatments. Analysis is specific to the immediate impacts associated with project implementation but does not describe the longer-term impacts of habitat protection that may result—e.g., the reduction in loss of California spotted owl habitat due to catastrophic wildfire, or the faster rate at which stands treated with single tree selection develop old forest characteristics. Where short-term adverse impacts are identified, these should be considered in the context of longer-term, often positive effects. The potential long-term effects on vegetation should be described when they have been modeled.

Wildlife Habitats Across the Whole Project Area

The concerns of the Department of Fish and Game (DFG) focused on the need to more accurately predict and monitor the potential impacts on key wildlife species. The DFG was specifically concerned that the treatments as proposed in the DEIS could have serious negative impacts on spotted owl habitat based on the metrics used in the DEIS (e.g. percentage of suitable habitat within preferred ranges, loss of important habitat elements after silviculture prescriptions, habitat degradation outside of defined sites). Given the existing information demonstrating a decline in the lambda estimate of California spotted owl in the project area, DFG stressed the need for a conservative approach. Based on their initial reading of the Record of Decision, DFG considers it essential that the mitigation measures be implemented and that the monitoring process is thorough enough to increase our understanding of the relationship of California-spotted owls and forest structure. DFG also stresses the need to consider and monitor wildlife habitat attributes in the DFPZs and other land management activities.

The Department of Forestry and Fire Protection has far fewer biologists than the Department of Fish and Game but is in agreement that the relationship between owls and silviculture treatments must be empirically documented and analzed during the implementation phase. CDF noted that the original CASPO report (p. 82) presented a weak linear, not threshold, relationship (a correlation of 0.60) between "suitable habitat" as classified by the USFS and owl density. The Bart (1995) article quoted in the DEIS also noted a linear, rather than threshold relationship. In addition, CASPO also reported owl use of areas twenty years earlier on the Lassen National Forest still provided habitat benefits that were roughly one third of that measured for suitable habitat (p. 173). Given the potential variability in the prey base and specific habitat elements that would affect the prey base, the relationship between suitable habitat and adult survivorship may not be the only important relationship that needs to be addressed. Both CDF and DFG strongly support the integration of the mitigation and monitoring components into the selected alternative.

Fire Risk and the Costs and Benefits of Fire Risk Reduction Activities

As mentioned earlier in the description of the California Fire Plan, CDF wants to ensure that state and Federal fire protection efforts are well coordinated. The understanding of the relative effectiveness of different spatial arrangements of fuel modification programs is constantly improving. An interagency group in California works together to ensure that all departments use the same high quality fuels layer. A good example that coincidentally covers a section of this project area is highlighted on our web site *(http://frqp. edf. ca. gov/ data/ fire data/ fuels/ fuels.htm)* and is also attached to this document. We also believe greater coordination on fire planning modeling and monitoring could significantly improve both the USFS's and CDF's ability to plan and implement effective activities to reduce fire risks.

As designed, the DFPZ strategy has two major components: to reduce fire severity (and, hence, adverse effects) on treated areas and to limit fire size such that untreated areas are not subject to high severity fires. Using a range of mixes of linear and area DFPZs could significantly the overall effectiveness of the program. Many of these technical issues could be effectively explored if a rigorous, scientific planning tool similar to the California Fire Plan was used. Providing the planning tool in a forum where it could be used by stakeholders to explore different potential outcomes would be beneficial. We would be very willing to work with the USFS and the local stakeholders during this process.

The Need for Clearer Descriptions of Probable Long Term Impacts

The difficulty of discerning the probable outcomes of the pilot project as described in the DEIS makes it clear that the Forest Service needs to develop a more transparent decision support system that is based on good science and incorporates multiple variables. Hopefully, this will be one of the valuable outcomes of project implementation.

It is central to the selection of an alternative to assess the long-term positive and negative effects of each alternative. Such an assessment would include an evaluation of the relative effectiveness of proposed land treatments to protecting areas of importance or resource value from catastrophic fire effects. The DEIS should describe how the 5 year plan will affect future forest management. Although timber growth and harvest modeling extends into the future for a century, similar assessments are not developed in even a qualitative manner for other resources. In addition, there is little description of forest management and intensity of land treatment in areas not occupied by California spotted owl PACs and SOHAS.

Proper Citations from Sierra Nevada Ecosystem Project Chapters

The DEIS' use of the Sierra Nevada Ecosystem Project (SNEP) Report is often selective. The most significant problem is the claim that the DEIS follows SNEP in using the LS/OG and ALSE systems for defining individual polygons for resource management. Beyond the specific chapters with unique authors in SNEP Volumes II and III and the Addendum, the applicable reference from SNEP regarding old growth forests would be Volume I, Chapter 6 on "Late Successional Old-Growth Forest Conditions." This chapter presented three, not one, equally plausible strategies to counter the major declines in late successional forests that were found during the SNEP assessments. "Strategy 1: Areas of Late Successional Emphasis" corresponds to the information included in the DEIS. However "Strategy 2: Distributed Forest Conditions" and "Strategy 3: Integrated Case Study" are also SNEP strategies. Strategy 3's focus on integrating seven different goals-late successional forests, vegetation, wildlife habitat, watershed and aquatic areas, fire protection, community well-being, and private land contributions to ecosystem sustainability—is a more realistic SNEP strategy that should have been referred to in the DEIS.

The use of non-repeatable forest classification schemes to delineate specific treatment areas will present a serious challenge for accurate monitoring. The LS/OG and ALSE characterizations are critical since they are the major difference between the alternatives but may or may not be the most important acres for California spotted owl habitat and defensible fuel protection zones. We would suggest that the Forest Service utilize their existing forest inventory and analysis program to track the effects of different management prescriptions in a rigorous manner.

Economic Impacts for a Region with High Unemployment

Alternative 2 will make very large contributions to the local and regional economies. This information should be included in the "Summary Comparison of Alternatives" in Chapter 2. Compared to Alternative 4, Alternative 2 would infuse an additional $381 million in personal income and $760 million of total sales into the eight-county project area over the five-year project period. In addition, on an annual basis, Alternative 2 would directly or indirectly create over 1,600 annual new jobs more than would be created under Alternative 4. As shown in the DEIS, this level of activity would reduce the region's currently high unemployment rates to close to the state average.

Impact beyond those directly in the forest products industry. No tradeoff with recreation related employment. Based on our analysis of EDD data.

Conclusion

The HFQLG pilot project represents a major opportunity for the state and Federal Governments to work together on landscape level vegetation management to protect public safety and to protect and enhance environmental values. We ask that the Forest Service, as it moves forward with analysis and implementation of the pilot project, engage in a more meaningful way with the department.

The Forest Service needs to begin immediately to develop the monitoring and adaptive management framework necessary for meaningful implementation of the pilot project. Variations in on-the-ground design of DFPZs and timber harvest units will provide valuable information to guide resource management in both the short and the long term. Without a clearer presentation of the individual components and an adaptive management approach, this information will not be garnered. Also, the

Acts mandate to be cost-effective requires a greater integration of economic analysis into the implementation, monitoring, and assessment of individual projects conducted under the pilot.

Again, the department appreciates the opportunity to comment on the DEIS. My staff and I are willing and interested in working with you to help make the implementation of the HFQLG Act a successful and educational pilot project that enhances the environment while providing significant economic opportunities. We strongly encourage the Forest Service to make the necessary modifications to its DEIS and implementation plans for the pilot project to ensure this outcome.

Mrs. CHENOWETH. The Chair now recognizes the forest supervisor from Plumas County, Fran Roudebush, for your testimony.

STATEMENT OF FRAN ROUDEBUSH, PLUMAS COUNTY SUPERVISOR, DISTRICT 1, QUINCY, CALIFORNIA

Ms. ROUDEBUSH. Good morning, Chairman Chenoweth, members of the Committee, Congressman Herger. Thank you for being here and for allowing me to participate in this panel. I am Fran Roudebush, Chair of the Plumas County Board of Supervisors. I am also representing the Regional Council of Rural Counties, which consists of 27 member counties in California. I also represent the Environmental Services Joint Powers Authority of RCRC.

Eleven counties have submitted letters or resolutions of support for the QLG plan and Alternative 2. Six of those counties are: Yuba, Butte, Glenn, Modoc, Trinity, and Siskiyou Counties. But five other counties—Plumas, Tehama, Lassen, Shasta, and Sierra Counties—boards have worked cooperatively and jointly and hired a forester to ensure that the congressional vote of 429 to 1 in favor of the Herger-Feinstein Quincy Library Group Forest Recovery Act bill is fully implemented. These counties represent 92 percent of the acres in the QLG plan.

We have letters of support from the Northern California Supervisors Association and the California State Association of Counties. I have enclosed several of these letters or resolutions to introduce into the record.

We believe that the end result of full funding and implementation of the QLG pilot project will be protection and enhancement of wildlife habitat, our watersheds, and all other national forest resources. This is important to our rural counties and those who depend on us for tourism, clean water, and business vitality.

A viable business community is essential to the overall well-being of our schools, families, and future growth potentials. This is what the QLG plan offers to many, if not all, of the communities within the QLG land base. Over the last eight years, our schools and roads have suffered greatly due to the decrease in timber receipts. In Plumas County alone, we have gone from an annual high of almost $9 million to a low of $1.5 million.

I have included information for the record from the '92/'93 school year showing some of the cuts the district had to make due to lack of timber receipts. During the '93/'94 school year, the district had to cut 33 percent of its staff—30 teachers and 10 classified employees. Since then, several teachers have been replaced, and three classified employees have been replaced, due to changes in California funding for smaller class sizes. But we lost some of our best teachers because of those cuts.

This year, Governor Davis signed into law the small school funding bill, otherwise known as AB-1, which going from memory I think gave back $600,000 to Plumas County schools, but only for the next three years. With the signing of that bill, we settle on the note, and I quote, "I urge Plumas unified school district to develop alternative sources of funding to replace those lost from the Federal forest reserve funds."

Plumas County's Road Department by next year will be looking at layoffs and the inability to keep its infrastructure repaired or roads plowed to meet business and emergency needs. The potential socioeconomic benefits to Plumas County roads and schools with a fully funded and implemented QLG pilot project is $9,660,000 in annual forest reserve revenues and in economic activities worth an annual estimate of $122,820,000.

The estimated totals for all eight counties are included for the record.

Last week we experienced lightning-caused wildfires whose potential impacts would have been reduced by implementation of the QLG management proposal. The EIS has five alternatives. Only Alternative 2 initiates action on fire and fuels according to a long-term strategy that could be implemented at sufficient budget, scale, and pace to effectively reduce the occurrence of large scale, high intensity wildfires.

Large scale, catastrophic wildfires have effects beyond their environmental impacts to national forest system lands. Local residents, private property owners, and local taxpayers bear the brunt of losses and damages, because wildfires also impose huge burdens on county highway departments and local public service districts to repair and/or replace roads, bridges, parks, and watersheds that degrade in the years following large fires.

There are very real and potentially significant linkages between healthy fire safe forests and private property values, public safety, and public infrastructure costs. We recognize that our community vitality is dependent upon the entire infrastructure—schools, law enforcement, health, business, recreation, churches, and more. That is why we are insistent that our forests are managed properly.

We are pleased that Congress passed the Herger-Feinstein Quincy Library Group bill and that the Forest Service had adopted Alternative 2. Now we look forward to efficient and expedient implementation of the plan. Plumas County can be counted upon to be a cooperative partner.

And if I could, at this time I would like to personally thank Congressman Herger and Senator Feinstein for always being there for rural California. We greatly appreciate it.

Thank you.

[The prepared statement of Ms. Roudebush follows:]

STATEMENT OF FRAN ROUDEBUSH, CHAIR, PLUMAS COUNTY BOARD OF SUPERVISORS, REDDING, CALIFORNIA

Chairman Chenoweth and Members of the Committee:

Thank you for being here and for allowing me to participate in this panel. I am Fran Roudebush, Chair of the Plumas County Board of Supervisors. I am also representing the Regional Council of Rural Counties, which consists of 27 member counties in California. I also represent the Environmental Services Joint Powers Authority of RCRC.

Eleven counties have submitted letters or resolutions of support for the QLG plan and Alternative 2. Six of those counties are Yuba, Butte, Glenn, Modoc, Trinity and Siskiyou Counties.

The five other counties Plumas, Tehama, Lassen, Shasta and Sierra Counties Boards have worked cooperatively and jointly hired a county forester to ensure that the Congressional vote of 429 to 1 in favor of the Herger-Feinstein Quincy Library Group Forest Recovery Act Bill is fully implemented. These counties represent 92 percent of the acres in the QLG plan.

We have letters of support from the Northern California Supervisors Association and the California State Association of Counties. I have enclosed several of these letters/resolutions to introduce into the record.

We believe that the end result of full funding and implementation of the QLG Pilot Project will be protection and enhancement of wildlife habitat, our watersheds and all other national forest resources. This is important to our rural counties and those who depend upon us for tourism, clean water, and business vitality. A viable business community is essential to the over-all well being of our schools, families, and future growth potential. This is what the QLG plan offers to many if not all of the communities within the QLG land base.

Over the last eight years our schools and roads have suffered greatly due to the decrease in timber receipts. In Plumas County alone we have gone from an annual high of almost $9,000,000 dollars to a low of $1,500,000 dollars. I have included information for the record from the 92-93 school year showing some of the cuts the district had to make due to lack of timber receipts. During the 93-94 school year the district had to cut 33 percent of its staff, 30 teachers and 10 classified employees. Since then several teachers have been replaced and 3 classified employees have been replaced due to changes in California funding for smaller class sizes, but we lost some of our best teachers because of those cuts. This year Governor Davis signed into law the Small School Funding Bill which backfills for the next three years some of the dollars lost due to timber receipts. I have also included a copy of the note Governor Davis sent with that signing and I quote, I urge Plumas Unified School District to develop alternative sources of funding to replace those lost from the Federal Forest Reserve Funds.”

Plumas County’s road department by next year will be looking at layoffs and the inability to keep its infrastructure repaired or roads plowed to meet business and emergency needs.

The “potential” social/economic benefits to Plumas County roads and schools with a fully funded and implemented QLG Pilot Project is $9,660,000 dollars in annual forest reserve revenues and economic activities worth an annual estimate of $122,820,000 dollars. The estimated totals for all eight counties are included for the record.

Last week we experienced lightning caused wildfires, whose potential impacts would have been reduced by implementation of the QLG management proposal. Of the EIS’s five alternatives, only Alternative 2 initiates action on fire and fuels according to a long-term strategy that could be implemented at sufficient budget, scale, and pace to effectively reduce the occurrence of large-scale, high-intensity wildfires. Large-scale, catastrophic wildfires have effects beyond their environmental impacts to National Forest System lands. Local residents, private property owners, and local taxpayers bear the brunt of losses and damages, because wildfires also impose huge burdens on county highway departments and local public service districts to repair and/or replace roads, bridges, parks, and watersheds that degrade in the years following large fires. There are very real and potentially significant linkages between healthy, fire-safe forests and private property values, public safety, and public infrastructure costs.

We recognize that our community vitality is dependent upon the entire infrastructure—schools, law enforcement, health, business, recreation, churches and more. That is why we are insistent that our forests are managed properly.

We are pleased that Congress passed the Herger-Feinstein Quincy Library Group Bill, that the Forest Service has adopted Alternative #2. Now we look forward to efficient and expedient implementation of the plans. Plumas County can be counted upon to be a cooperative partner.

Thank you.

RESOLUTION NO. 99—6271

RESOLUTION OF THE PLUMAS COUNTY BOARD OF SUPERVISORS

For The Herger-Feinstein Quincy Library Group Forest Recovery Act

Draft Environmental Impact Statement

WHEREAS, on October 21, 1998, the President of the United States signed into law, The Herger-Feinstein Quincy Library Group Forest Recovery Act which implements a five (5) year Pilot Project on the Lassen National Forest, Plumas National Forest and the Sierraville Ranger District of the Tahoe National Forest that are located in portions of Butte, Lassen, Nevada, Plumas, Sierra, Shasta, Teharna and Yuba Counties, and

WHEREAS, the Forest Service shall complete an Environmental Impact Statement and adopt a Record Of Decision within three hundred (300) days of the Presidents signing the Act into law, and

WHEREAS, the Resource Management Activities to be conducted on an annual acreage basis under the ACT are:

- Construction of a strategic system of Defensible Fuel Profile Zones (DFPZ's), on not less than 40,000 acres, but not more than 60,000 acres per year.
- Utilization of the uneven-aged forest management prescription of group selection (and individual tree selection) to achieve a desired future forest condition of all-aged, multistory, fire resilient forests on an average acreage of .57 percent of the pilot project area (approximately 9,300 acres per year).
- Total acreage on which resource management activities are implemented shall not exceed 70,000 acres per year.
- A program of riparian management, including wide protection zones and riparian restoration projects, and

WHEREAS, all the resource management activities shall be implemented to the extent consistent with Federal Laws, and

WHEREAS, on June 11, 1999, the United States Forest Service released the Draft Environmental Impact Statement for the Herger-Feinstein Quincy Library Group Forest Recovery Act for a forty five (45) day public review and comment period, and

WHEREAS, the United States Forest Service has analyzed five (5) alternatives in the Draft Environmental Impact Statement and has identified Alternatives 2 and 4 as the preferred alternatives to implement the pilot project:

NOW, THEREFORE, BE IT RESOLVED that the Plumas Supervisors request that the United States Forest Service:

Chapter

Findings and Recommendations

The Board of Forestry's California Fire Plan findings and recommendations were developed by the Fire Plan working team. These findings and recommendations are summarized into three categories:

- Levels of Wildland Fire Protection Services
- Wildland Fire Protection Fiscal Issues
- Prefire Management to Reduce Wildfire Costs/Losses

Levels of Wildland Fire Protection Services

A primary Board of Forestry responsibility is set forth in Public Resources Code Section 4130, which directs the Board to classify all lands within state responsibility areas (SRA) based on cover, beneficial water uses, probable erosion damage and fire risks and hazards; to determine the intensity of protection to be given each type of wildland; and to prepare a fire plan to assure adequate statewide fire protection so that lands of each type be assigned the same intensity of protection. With the recent integration of the State Fire Marshal's office, the responsibility for the protection of structures included in Health and Safety Code Sections 13143, 17920.7, 17921, and 18930 is considered in the PRC 4130 evaluation.

Board of Forestry is responsible for preparing a Fire Plan to assure adequate statewide protection.

This California Fire Plan is the result. It is the Board's approach to assessing the level of wildland fire protection.

Findings

1. The history of California wildfires indicates that the following trends will continue.
    - Risk from wildfire to life, property, natural resources, and firefighter safety is increasing.
    - Population will grow and more people will live and use wildland areas, especially in the Central Sierra and in the Southern California counties of Riverside, San Bernardino and San Diego.

- Topography and climate support ecosystems where large wildfires can be expected.
- Drought and fuel moisture conditions will be unpredictable but almost always dangerous in fire season.
- More structures will be constructed in areas that are very susceptible to wildfire.
- Historical legacy of narrow roads, difficult entrance, insufficient water supplies, flammable building construction and location that make many communities and homes wildfire-prone still exits.
- Public demand for wildland fire protection and other services will increase.

2. Deteriorating forest health, increasing fuel loads and other factors have led to more intense, destructive wildfires; unabated this pattern will continue.
3. Assets at risk will increase, especially watershed assets, because of the rapid rise in the demand for water to supply more people. Based on population projections, the potential for accelerating loss of protected assets, especially life and property, will be greater from disastrous wildfires.
4. Large wildfires do not respect political or property boundaries. Historically, a strength of California's firefighting agencies is found within a concept of mutual cooperation at the federal, state, and local levels of government. Day-to-day mutual aid for initial attack, as well as a statewide mutual-aid system for fire disasters, are the basis of this cooperation and coordination. The ability to rapidly mobilize, effectively deploy and support large numbers of specialized firefighting resources is essential to cope with large multiple fires. Hence, CDF, in cooperation with other fire agencies, must maintain infrastructure, including communications and capital improvements necessary to facilitate such a response.

Large wildfires do not respect political or property boundaries, thus cooperation among fire agencies is necessary. (Department of Forestry and Fire Protection photo)

5. Fire protection forces in California must have sufficient depth to respond to large, multiple wildfires and still prevent other small fires from becoming large damaging fires. CDF plays a key role in supplying and coordinating such forces; it should maintain and enhance this ability. The 1985 Fire Plan includes a model to provide adequate depth of resources that show CDF needing 96 additional engines and 825 personnel for managing large fires using the Incident Command System. There is a greater need today as reflected in the California Fire Plan.

Mrs. CHENOWETH. Thank you, Ms. Roudebush. And I did make a mistake.

Ms. ROUDEBUSH. That is okay.

Mrs. CHENOWETH. I want to make sure that the record reflects the fact that you are the Plumas County Supervisor.

Ms. ROUDEBUSH. Yes.

Mrs. CHENOWETH. The Chairman should always wear her glasses.

Ms. ROUDEBUSH. Do as I do with larger print.

Mrs. CHENOWETH. Thank you very much for your fine testimony.

Now I call upon Mr. Frank Stewart for his testimony.

STATEMENT OF FRANK STEWART, COUNTIES QLG FORESTER, CHICO, CALIFORNIA

Mr. FRANK STEWART. Thank you, Madam Chairman. If I might, if I could have this lower poster placard put up.

Madam Chairman, I appreciate the opportunity to speak to the Committee and to my Congressman Herger today. And if I might, I would like to—I have written testimony, but I had my 35th wedding anniversary yesterday. I have three members in my family, a wife and two kids, that are teachers in rural America.

And you opened up with what the QLG process is all about. It is about people. It is about people's right in rural America to live and raise their kids the way they want to. This report that you did—and I commend it to everyone—it was a wonderful report, because it informs the public as well as Congress of the magnitude of the problem that we face in public lands in 11 western states.

The report also talks about a window of opportunity, but it puts it on a timeframe of at the end of 25 years. I personally agree with that. I think that it is probably shorter than that. But I think what you have through this report is a window—through the window of opportunity is the great opportunity of implementation, to solve the problem that wasn't defined and how to do it in this report.

One of the problems they found in the report with defensible fuel profile zones, I might add, is they looked at it as defensive last resort mechanism. Our strategy for the Quincy Library Group process says, first, let us save the resource. That becomes step 1 in a five-year period, to lay these fuel breaks out across the landscape. Then, we can go ahead and apply management to the rest.

So there is a real problem with this report in that it uses DFPZs as nothing more than a last resort/failure effort. We think it is a key to success, and that is why I think the monitoring and the implementation is very important.

I am an industrial forester for 30 years in Northern California. I have had the opportunity—I have been a member of—one of the founding members and involved with the Steering Committee with the Quincy Library Group. I was formerly with Collins Pine Company. About a year and a half ago, I left Collins Pine.

I had the opportunity to—I have such faith in what this opportunity has is to approach the counties involved with the Quincy Library Group to represent their interest, the county's interest, and there are eight of them as we look at the second placard up here, if we could move that one, please.

There are eight counties impacted by this, and one of the problems I have always felt in the past, in 30 years of experience, is the counties are dominated by such a large percent of their land base by Federal lands really don't have the opportunity to have adequate representation in some of the decision making processes and getting things done on the landscape level.

And I think the Quincy Library Group process does that, and I commend the counties that have employed my service for that for five years. And Supervisor Roudebush has been a leader with Plumas County to do that.

The two other things I would really like to talk about that I think are important in implementing this is Mr. Stewart—and by the way, you will notice that we might have common names but different gene pools. I don't like age management. He obviously doesn't have a problem with it.

[Laughter.]

Though it is interesting that two Stewarts would find their way into natural resources, because it is important. And that is what my wife, my son, and his daughter do. They teach the real natural resource of this nation and that's our youth. And that is what is important about making this thing work.

We have struggled for six years to get this thing in place. Through the leadership of Congressman Herger and yourself and Senator Feinstein, we have been able to get this thing out there. Now we have to make it work. The strategies, like I say, are short term—is to get the—protect the land base, break up the fuel maps.

Now, that is a map, and it shows you the complexity. That is Alternative 2, the QLG alternative. Now, that covers eight counties. It is about 120 air miles long and about 110 air miles wide. The thing that I think is so wonderful about the opportunity—also, I'm glad to see the State of California here—is it allows us to think outside of the box for once because we are moving in a positive direction.

These same forests health fuel reduction problems do not exist on public lands. We have them on private lands also, industrial and non-industrial. And so when you look at that geographic area that is encompassed in the eight counties and the two and a third national forests, I would let you know there is two and a half million acres of private forest land and that same sphere of influence.

It so happens in our area 50 percent of that land is industrial timber lands, and well managed fuel control levels are held down and well managed land. The other 50 percent are owned by thousands of individuals, non-industrial private lands.

So there is a wonderful opportunity, as the Forest Service works on laying out the fuel DFPZ systems across the Federal land, to coordinate efforts with the California Department of Forestry, to coordinate efforts with—in the eight counties, we have six county fire safe councils, which bring people together to help solve fuel reduction problems and fire protection. That map—those are the red dots on the map.

The blue dots are watershed groups, citizen watershed groups, and natural resource council—resource conservation districts—excuse me—that have concerns about watershed issues and drainages. The yellow on there, the large yellow dots are stand-alone powerplants. They are facilities that can utilize the biomass material that comes off of the forest thinnings.

So I think one of the big things here, that by implementing this—and I think the Forest Service stepping through the window and grabbing this opportunity with the zeal and the zest, the 429 to 1 vote said, “Go do it,” could be one of the solutions across the west for the problems. A big key to this is the pace and scale.

The bill sets 40- to 60,000 acres a year. The concern I have is the draft—I haven’t received my final yet because of the lateness in getting the decision made. Everything I worked through on the draft talked about that their pace is only about 73 percent of what the law allows. My wife is a teacher; 73 percent is a C. This is not the way you advance a program that got 429 to 1.

We move this program through at the maximum opportunity that the law allows, protecting the environment, but at the same time, because everything is based on an acres treated basis—this is the new paradigm that we have established in this law. We are talking about, instead of the acres treated, therefore, if you treat the acres appropriately, and at the amount allowed under the law, then, therefore, we get the great socioeconomic benefits that come out in addition to those environmental.

I would encourage you very strongly to help support the full maximum funding for the full maximum acreage allowed, because the cost-benefit ratio on this project is for every dollar we as taxpayers spend on this project, the government gets back $1.38. Now, that return warrants some evaluation and support because this report talks about the government asking for $12 million to go out there and try and burn their way back to a forest healthy condition. And I don’t think that is going to work.

Had you been here on July 4th, you would have saw one of the tragedies of fire being the main silvicultural tool for reducing fuels. Up in the community of Lewiston in Trinity county, we tried to burn some out—one of the government agencies; I believe it was BLM—the fire got away, 2,000 acres burned, and we burned out 24 homes.

Had you been here just a week ago when all of these fires started, you would have saw another biological and physical concern that we have was the smoke problem that we had in addition to all of the devastation that went on. So I think that QLG is an opportunity to treat fuels, put a dollar back into the treasury, and to have a good environment for all of us.

Now, personally for you I think, Mrs. Chairman, that little white dot up there in the State of Idaho is a resolution from the board of Boise County. And I wish you would—and I understand that is your district. And so you have people from your state and across the west looking into the window to see what they can get from the QLG to see if there might be some help in their area with the forest also.

Thank you very much.

[The prepared statement of Mr. Frank Stewart follows:]

Mrs. CHENOWETH. Thank you, Mr. Stewart. And for the record, it is not “Mrs.“ yet.

Mr. FRANK STEWART. Okay.

[Laughter.]

Mrs. CHENOWETH. The Chair recognizes Mr. Dick O’Sullivan from the California Cattlemen’s Association Public Lands Committee.

Mr. O’Sullivan?

STATEMENT OF DICK O'SULLIVAN, CALIFORNIA CATTLEMEN'S ASSOCIATION PUBLIC LANDS COMMITTEE

Mr. O'SULLIVAN. Thank you, Madam Chairman. I want to thank you for holding this hearing in Redding, and I want to thank you for inviting us, our association, to make comments.

My name is Dick O'Sullivan. I am a grazing permittee on the Lassen National Forest, and I am also, as you have stated, the current co-chairman of the California Cattlemen's Association Public Lands Committee.

Although our association has serious concerns regarding the implementation of the Quincy Library Group Act, we strongly support local planning based upon sound objective science. And I want to make it clear that we most certainly support cleaning up the forests and reducing the fuel loads. We participate in many cooperative forms and have found local decision making to be a critical component to successful resource management.

The livestock industry, however, was not part of this original consensus process that led to development of the Herger-Feinstein Forest Recovery Act. It was not until a bill had been introduced and was moving through Congress that we realized the bill not only did address grazing, but also that grazing language could introduce exceptionally restrictive management standards which could significantly decrease the economic viability of ranching for affected operations.

At that point, our representatives contacted Senator Feinstein and Congressman Herger, both of whom assured us that it was neither their intention, nor that of the original Quincy Library Group plan, to negatively impact grazing. Based upon these discussions, we contacted Senators Feinstein and Craig to clarify congressional intent.

Senator Feinstein, in a colloquy with Senator Craig, when he asked her on the floor of the U.S. Senate, "How will the SAT guidelines affect livestock grazing?" she commented, "Neither the authors of the bill, nor the QLG, ever intended to negatively impact grazing generally." Also, and I quote her comments, "the only location where these guidelines would apply to grazing is where cattle are actually in the work site at the same time a QLG activity is taking place."

The SAT guidelines affecting grazing will apply only to the specific work area location and only at the specific time that projects are conducted within the pilot project area. We wish to thank Congressman Herger, Congressman—or Senator Feinstein, and Senator Craig for this colloquy that is in the document.

But to ensure that you are going to protect grazing, we need to have this specific language in that final document, so it is very clear to everyone what we are talking about—the SAT guidelines affecting grazing.

Unfortunately, as prescribed in the draft environmental impact statement, Alternative 2 could potentially introduce management standards stringent enough to remove grazing from many of the most viable portions of the grazing allotments.

Alternative 2 of the draft environmental impact statement introduces a management standard referred to as SAT guidelines. These guidelines are put in place wherever a resource activity, as described in the Act, is implemented. These guidelines call for the elimination of grazing, if riparian resource management objectives are not being met, regardless of whether resource condition is improving towards desired future conditions or objectives.

Alternative 2 is written in the draft EIS, applies the SAT guidelines to livestock grazing in areas where resource activities, as defined in the Act, are scheduled to be conducted. Livestock operators need to understand the importance of riparian areas.

This is our primary source of forests within the mountains and meadows in riparian areas. And these forests are in an upward trend now from what they historically have been. Livestock operators are very aware of the necessity to manage their cattle in this forest.

The solution to this, as far as grazing is concerned, is we feel that we should only establish riparian management projects or riparian habitat conservation areas where riparian management objectives are not being met, and where trend monitoring does not indicate an upward trend in condition. We need to conduct site-specific NEPA analysis to verify that riparian management objectives are not being met, and that resource conditions are not already improving.

This environmental analysis should be site-specific, scientifically objective, verifiable, reproducible, and subject to peer review. If livestock are indicated to be the cause of the degradation, the assessment must analyze the effects of current livestock management, which may be dramatically different than prior management.

If the SAT guidelines are to be applied, they should only affect livestock grazing when cattle are actually in the work area, and at the same time personnel are conducting the work as intended by Congress.

In conclusion, there needs to be specific language in the final document to protect grazing. The California Cattlemen's Association stands ready, willing, and able to work with the U.S. Forest Service to put this language in there. Again, I want to thank you for coming, and I want to thank you for inviting us to participate.

[The prepared statement of Mr. O'Sullivan follows:]

STATEMENT OF HON. DICK O'SULLIVAN, CALIFORNIA CATTLEMEN'S ASSOCIATION

Chairman Chenoweth and distinguished members of the Subcommittee on Forests and Forest Health, I am Dick 0' Sullivan, a rancher from Paynes Creek, California currently serving as the Co-Chair of the California Cattlemen's Association Public Lands Committee. Thank you for the opportunity to be with you today to present oral and written testimony on the effects of the proposed actions of the United States Forest Service (USFS) on the California beef cattle industry.

The California Cattlemen's Association is a trade association that was formed in 1917 and represents all segments of the beef cattle industry. We have over 3000 members involved in seedstock, cow/calf, stocker and feeding operations.

Although our industry faces challenges everyday from climatic and market conditions, we are increasingly impacted by local, county, state and Federal regulations that threaten our livelihood. Our comments today focus on the environmental impact statement for the Quincy Library Group (QLG) management plan, an action that threatens the viability of ranching within the Lassen, Plumas and Tahoe National Forests and the local community.

Background

Although our association has serious concerns regarding the implementation of the Quincy Library Group Act (Act), CCA supports local planning based upon sound objective science. CCA participates in many cooperative forums and has found local decision making to be a critical component to successful resource management. The livestock industry, however, was not part of the original consensus process that led to the development of the Herger-Feinstein Forest Recovery Act. During the initial establishment of the Quincy Library Group, livestock interests were assured that the members of the QLG did not intend to impact grazing. In fact, the livestock representative on the group was told he did not need to attend the meetings. That being the case, local ranchers focused their time on alternative issues and did not attend the meetings which led to the development of the Act.

It was not until a bill had been introduced and was moving through Congress that we realized the bill not only did address grazing but also that the grazing language could introduce exceptionally restrictive management standards which would significantly decrease the economic viability of ranching for affected operations. At that point our representatives contacted Senator Feinstein and Congressman Herger, both of whom assured us that it was neither their intention nor that of the original Quincy Library Group to negatively impact grazing. Based upon these discussions language was added to the Senate Record by Senators Feinstein and Craig to clarify congressional intent regarding the Act and livestock grazing within the affected forests. This language very specifically states, “neither the authors of the bill, nor the Quincy Library Group ever intended to negatively impact grazing generally” (Congressional Record, S12787). We would like to express our gratitude to the Senators for injecting this language into the Congressional Record, which limits the expected impacts of the Act upon grazing. To ensure the final document adheres to congressional intent, this language should be included verbatim in the final management plan. Unfortunately, as presented in the Draft Environmental Impact Statement (DEIS), Alternative 2 could potentially introduce management standards stringent enough to remove grazing from many of the most valuable portions of the grazing allotments. It is our sincere hope that these sections of the DEIS have been modified in the FEIS, but absent significant modification it is highly probable that implementation of the Act will result in the removal of livestock forcing permittees to discontinue their ranching operations.

SAT Guidelines

As stated before, since we have not yet received a copy of the FEIS and it is not yet available on the Internet, we must base our concerns upon the management direction in the DEIS and in the Record of Decision (ROD).

Alternative 2 of the DEIS introduces a management standard referred to as the Scientific Analysis Team (SAT) guidelines. These guidelines are put in place wherever a resource activity as described in the Act is implemented. These guidelines call for the elimination of grazing if riparian resource management objectives are not being met, regardless of whether resource condition is improving toward the objective. Alternative 2, as written in the DEIS, applies the SAT guidelines to livestock grazing in areas where resource activities as defined in the Act are scheduled to be conducted. As these activities include the establishment of riparian habitat conservation areas and riparian management projects, it is expected that many grazing allotments will be affected. In fact, within any single allotment there could be numerous sites requiring SAT guidelines, which would then destroy the economic viability of the allotment.

When the SAT guidelines are applied to a riparian area within an allotment, for example a meadow, they may require that cattle be excluded from that portion of the allotment for as long as that area is included as a riparian habitat conservation area or riparian management project. For most permittees, it is not feasible to remove cattle solely from riparian areas as the economic viability of these allotments is tied to the availability of forage within the meadows. Without this meadow feed, it becomes impractical to continue using the allotment. Without the allotment, many ranchers will no longer have access to summer feed which will cause their entire operation to be no longer economically viable thus many may have to discontinue operations and sell their home ranch.

The Solution

Livestock operators keenly understand the importance of riparian areas as the economic viability of ranching in mountain meadows is directly tied to the environmental health of riparian areas. To ensure the continued viability of the local livestock industry and to ensure the implementation of the Act remains consistent with congressional intent, CCA suggests the following be incorporated into the final management plan:

- Only establish riparian management projects or Riparian Habitat Conservation Areas (RHCA) where riparian management objectives are not being met and where trend monitoring does not indicate an upward trend in condition.

- Only establish riparian management projects or Riparian Habitat Conservation Areas (RHCA) where riparian management objectives are not being met and where trend monitoring does not indicate an upward trend in condition.
- Conduct site specific National Environmental Policy Act (NEPA) analyses to verify that riparian management objectives are not only not being met but also that resource conditions are not already improving before establishing a riparian management activity or RHCA.
- This environmental analysis should be site specific, scientifically objective, verifiable, reproducible and subject to peer review.
- If the environmental analysis indicates a degraded resource condition, the assessment should also identify the cause of degradation.
- If livestock are indicated to be a cause of degradation this assessment must analyze the effects of current livestock management which may be dramatically different then prior management, i.e. the degradation may be due to historical livestock use as opposed to current management.
- If domestic or wild ungulates create "adverse" effects to riparian areas or to water bodies, these effects must be clearly defined and substantiated scientifically in the environmental analysis at site specific locations.
- If the SAT guidelines are to be applied they should only affect livestock grazing when cattle are actually in the work area and at the same time personnel are conducting the work as intended by Congress.

Conclusion

I appreciate your allowing me to share our concerns and solutions regarding livestock grazing and the implementation of the Quincy Library Group. We certainly appreciate your attention to the needs of the livestock industry here in California and look forward to working closely with the Committee to address these issues. If you have any questions regardingn comments made in this testimony, please feel free to contact Patrick Blacklock our Director of Administration and Policy Analysis or myself.

Again, we thank you for the opportunity to present testimony to the Subcommittee on Forests and Forest Health. Our association is ready to assist the Committee in anyway possible.

Mrs. CHENOWETH. Thank you, Mr. O'Sullivan, for that fine testimony.

The Chair now recognizes Congressman Herger for his questions.

Mr. HERGER. Thank you, Madam Chairman.

I just want to state, Mr. O'Sullivan, that it is certainly our intent, and myself as author of this legislation, that we not negatively affect a group such as the cattlemen who have been wise stewards of the land since the mid 1800s. And certainly we will be monitoring this and your involvement, and we will be seeking your input throughout this.

I just wanted to reaffirm that, and I know that Chairman Chenoweth had mentioned this in some of her earlier comments, so I just wanted to make sure I reemphasized that.

If I could maybe, Ms. Roudebush, just a couple of questions for you, if you could. In your testimony, you stated that it will be next year that Plumas County may face personnel reductions in the Public Works Department. Could you tell me why that has become a critical year?

Ms. ROUDEBUSH. Because over the last five years we have basically had to deplete our reserves due to the lack of forest receipts that have come in, and because this year's receipts are—we are estimating them to be under $750,000, and our Road Department budget is something like $6 million.

Obviously, there is not going to be enough money to go around. The only reason we haven't had to make those cuts this year is because of some projects we are actually doing for the State of California.

Mr. HERGER. What percent of your county is owned and controlled by the Federal Government, approximately?

Ms. ROUDEBUSH. Approximately 75 percent.

Mr. HERGER. Three-quarters of your entire county is removed from the tax base. And, of course, what this means is 25 percent of gross receipts would come to—specifically for schools and roads. So very, very crucial to your——

Ms. ROUDEBUSH. Absolutely.

Mr. HERGER. [continuing] and other counties throughout our timber-producing areas.

Even if the QLG bill is implemented next year, there will still be a delay in county revenue from the timber sale receipts. Does the county have a contingency plan for that that will assist in minimizing the potential health and safety risk which you related in your testimony?

Ms. ROUDEBUSH. Yes. I think you are aware of H.R. 2389, which is a bill that is being supported by the counties and the school's coalition. It is referred to as a 25 percent safety net solution. What they are asking is that a very short-term 25 percent plan be implemented, and that they take—I think it is one of the highest five years—the highest three years out of the last five, and 25 percent of that, and give that to the counties, but only for a short term.

We don't want that to turn into an entitlement, nor do we want the administration's idea of decoupling to come into this. We want this to be a very short-term bill, and hopefully that will succeed.

Mr. HERGER. Good. And I am following them, the co-sponsor. And, again, we are trying to do for our California—outside the northern spotted owl—to try to deal with them in somewhat the same way. And I want to thank you for your involvement here.

In your closing statement, you indicated Plumas County wishes to be involved in the program implementation. What type of assistance can Plumas County provide?

Ms. ROUDEBUSH. Well, as I mentioned, we are supporting and helping to pay for county forester Frank Stewart, and we have pledged to continue to do that because we know how important the monitoring of the QLG program is over the next five years. So ourselves, along with five other counties, are paying for him and pledge to continue to do so.

We have had a wonderful group of volunteers that have worked on QLG for the last seven to eight years at a very high level of intensity. And I don't think we could continue to ask that of them, although I am sure they would willingly do it. We think that it is important that we step up to the plate and help support that with our dollars as well.

Mr. HERGER. Thank you.

Ms. ROUDEBUSH. You are welcome.

Mr. HERGER. Mr. Frank Stewart, in your view, how should the Forest Service best proceed with implementation of the QLG?

Mr. FRANK STEWART. Start tomorrow. I would have to agree, Congressman, with George Terhune. I think there are some revisions of the map that need to be done, but I think that there are some things that can be done this operating season—what is left—so we do not have this downfall of work.

I know we have to go through the appeal process, but I think we have to move forward with a bill that got a 429 to 1 vote. I think this is the solution, and I think we need to do whatever we can to encourage an attitude within the Forest Service that this is a solution. Let us move forward.

So I think the initial planning can get done. I think another big thing we ought to do is make sure to get some timber paint, marking paint. I understand we have got some real problems getting some paint out to the districts, not just in California but across the west. I would hate to think we couldn't move forward because we don't have an adequate purchasing agent making sure we have paint to be done to get the trees marked.

Mr. HERGER. We could have a hearing just on that issue.

Mr. FRANK STEWART. I am sure we can.

[Laughter.]

Maybe we need one on it, too.

Mr. HERGER. As county forester, can you offer them any assistance government to government?

Mr. FRANK STEWART. First of all, I am not an employee of them. I am working as a consultant with the county. The biggest opportunity that the forest has is the opportunity to think outside the box. Fire does not stop at the property line.

In my short involvement after leaving Collins and having the opportunity to represent the county, and look at it from a different perspective, there is a wonderful opportunity to work through the County Fire Safe Council, with the Department of Forestry.

Mr. Stewart, some of the stuff that they have in Sacramento, some of those computer wonks and the GIS stuff is wonderful. We need to bring that resource together with what the Forest has, so we get the best things in planning out in front of this pilot project, because I really believe in the 30 years with the Forest Service, dealing with the Forest Service in Northern California, this is going to be the only shot we get at it. This is the good one.

Now, we need to make it work, so I think the counties are fully behind it. They have been. And I think by working through the fire safe councils and bringing that resource in, and then through CDF, we get the best planning done.

The second benefit of that, Congressman, is it allows us to look at the job from a financial standpoint. Contractors can't spend millions of dollars to buy equipment if they have very short, limited operating periods. We need to look at extending the periods to meet the environmental concern.

By looking to extend operations on private land, by helping reduce fuel—maybe we can talk about a fuel reduction tax credit. Something that addresses the scale of the problem out there. This is where I think the opportunities are now going to be, looking down the road.

Mr. HERGER. Can you assist them with proposed locations for fuel breaks and group selection projects?

Mr. FRANK STEWART. Oh, sure. As other members of the Quincy Library Group, you bet. My involvement in representing the counties is through a member of the Quincy Library Group. We are a collaborative process.

But you bet. They probably have the best—and I think it has to be said here—some of the finest resource managers work for the U.S. Forest Service. I have taken some pretty terrible hits in the media during this process. I personally—some of the finest young men and women work for that agency, and I am quite pleased to have the opportunity to work with them.

I think if we can turn the spark of enthusiasm on with them, they have enough professionalism to get the thing done out in front. We need to encourage them. I think that is Congress' job is to encourage, enforce, make sure this thing happens. This oversight hearing is a wonderful first step at putting it down.

I would much rather have you come out and take you up. Now that is a defensible fuel profile zone. That is not a clear cut. That is a wonderful thin forest. That was one design on the Lassen National Forest—sold, harvested, thinned, and it is going to serve its purpose. So I think the people inside the group right now can do it. I think you have got to give them the nudge, but we will help where we can on this side.

Mr. HERGER. Well, the fact that we are having this oversight hearing less than a week after the final decision has come up I think shows the interest of Congress in seeing that this is implemented. And I concur with you, we do have some outstanding people, both in the Forest Service and in the California Department of Forestry, and others that are here. That we just need to implement and give them the green light to be able to move ahead with what I think is just an outstanding plan.

You gave some very interesting figures earlier that—something to the degree, if I recall, one dollar that the government puts in, Federal Government, it will bring—will be restored $1.38. Economically, what does full implementation of QLG plan mean for the counties?

Mr. FRANK STEWART. Well, again, as Mr. Stewart said, I wish that they wouldn't have stuck this up front in the EIS. That is the beauty of what this EIS proves, the process, the economic opportunity of $2.1 billion. The economic opportunity of Alternative 2, fully implemented, is $2.1 billion, not just to the counties but the state. That is tremendous.

They are currently under 1—no strategy—move forward with 1 is about $800 million. So you can see that $1,400,000,000 increase in 2. And I think it has to be said the other beauty of the EIS, Congressman, was that the environmental community got to run their own alternative, and that is Alternative 5.

And Alternative 5, I want to tell you, is a complete failure from the county standpoint. It will only have an economic opportunity, since we put them on scales of QLG of $2.1 billion, their alternative would have $280 million throughout its life. And current practice is about $900 million, so you could say we are talking $700 million reduction. That is economic destruction of the county.

And then because it relies on big land reserves, big wide buffers, and fire as the management tool, you would experience what we saw at Lewiston in the smoke in the air. That's the beauty of 2. So along with the good environmental benefits for enhancements, the economics are wonderful.

The 25 percent forest reserve revenues that would go to the eight counties are almost comparable with what historic levels have been. So from all angles, as Mr. Terhune said, it is really a win-win-win for all of us.

Mr. HERGER. Thank you.

And then, Mr. Dick O'Sullivan, again as was mentioned, the cattlemen, who have been here since the mid 1800s, are a key part of this, and we want to make sure that your interests are heard. How would you like to be involved in the QLG process as individual EAs are composed to implement the process?

Mr. O'SULLIVAN. Well, Congressman, I think that in fairness here, that in Alternative 2, in these defensible fuel profile zones, well they are quarter-mile strips and they are 10 to 12 miles long. And they will come across the canyons, across riparian areas and waterways, and wherever they touch a waterway, wherever they touch a riparian area, that will be called a riparian protection zone or a riparian habitat conservation area. That makes it automatically subject to SAT bylaws.

Right now, we are under a lot of pressure to stay on Federal ground, as you can understand. To be able to stay on Federal ground in the future, a livestock permittee is going to have to manage like he has never managed before. We are going to have a lot of people leaving because of that.

The management required right now is extensive. If these riparian habitat conservation areas are created all over the permit, we can't move cattle if we are restricted to these areas. I can show you on a map, on particular permits I am familiar with, where you simply wouldn't be able to cross those areas if they enforced the SAT guidelines on us.

Now, how could we get around that? We need to be on the ground. If we have an area, a riparian area, that requires riparian restoration, we want to restore that. We don't want to see that area degraded. We are moving cattle all the time to prevent that. We want to be on the ground, but we want the Forest Service to be objective when they are doing their documentation.

As the Chairwoman brought up a moment ago, the Forest is not—their science is based upon subjectivity and opinion in a lot of cases, and that drives the process. We want them to be scientifically objective when they deal with these issues. That is how we want to get involved.

Mr. HERGER. Good. Well, I want to work with you and all of us to see that that happens.

Thank you very much, Madam Chair.

Mrs. CHENOWETH. Thank you, Mr. Herger.

I wanted to ask Fran Roudebush—there were some opinions expressed by some outside businesspeople with regards to the fact that they disapprove of the QLG. I think it was expressed in The Wall Street Journal. I would like for you to comment on that. I was mystified by that.

Ms. ROUDEBUSH. Well, you know, the interesting thing there—not to myself, but to one of my fellow supervisors who had an apology from Nevada County's board in their vote, and my suggestion was that he take back to them that they could apologize—the best way—by reversing that vote.

I think the businesses fail to understand that tourism obviously does come up to look at trees, but those same tourists come up to buy the products that are supported by the wood industry itself. And so I don't understand it either, other than maybe they just didn't fully understand what the QLG represents and what the program involves, and they simply think of clear cutting as what you do in the woods. And that is obviously not what we are recommending.

Mrs. CHENOWETH. That is obvious. It was surprising to me, when I first got back to Congress several years ago, that even some of my colleagues who represent districts in the east really thought that we didn't have one blade of grass standing, every frog pond had been drained, and every tree cut.

Ms. ROUDEBUSH. Right.

Mrs. CHENOWETH. And it has been a pleasure to meet and be able to join Representative Herger in actually getting eastern members up in an airplane and out in the woods on the ground to see the difference in the management techniques, and the fact that you could be in an airplane in Idaho or California and from horizon to horizon you still see trees, and—though the misperception has not served us well in terms of actual votes generated in the Congress.

So the work that Congressman Herger has done, I have followed in his footsteps. We had a leadership tour a couple of years ago where we brought the entire leadership team out to the west, and it was a born again experience for some of them.

And so we need to continue that, and certainly QLG has not only served to help move a program forward in a window of opportunity in this community, but it has served as a blueprint for other counties such as Boise County and other areas. So, again, my hat is off to you.

Ms. ROUDEBUSH. Well, thank you. And, again, I would like to thank you on behalf of the rural counties for your support of Congressman Herger and the QLG bill. Without you, this wouldn't have been successful either. Thank you.

Mrs. CHENOWETH. Well, it certainly is a very worthy cause.

I want to ask Mr. O'Sullivan—I have been watching this process from the cattlemen's point of view, too. And I want to make certain that no existing rights are abridged, and the original legislation is fashioned so that it didn't allow for existing rights to be abridged. I do not want to see guidelines implemented that would abridge or take existing rights, because it can be very, very costly for the American public, not only on—if the guidelines actually abridge existing rights, proven existing rights.

Mr. O'SULLIVAN. One of the rights that this doesn't address, congresswoman, is adjudicated water rights.

Mrs. CHENOWETH. That is right.

Mr. O'SULLIVAN. All through the forest.

Mrs. CHENOWETH. That is right.

Mr. O'SULLIVAN. How are they going to deal with that if they have this SAT restrictions on resource rights?

Mrs. CHENOWETH. And we do need to make sure those rights are protected. In the original legislation, they were not abridged, and so I will be watching very carefully and working with Congressman

Herger and the Senators also to make sure your existing rights are not abridged.

Recent case law has come down that not only says you have a use right to the water, but your ditch rights and rights and of way, which means your ability to move your cattle from one allotment to another, and then also the rights to the foliage on your allotment.

Should the Federal Government decide, through guidelines outside the purview of the Congress, to abridge any of those existing rights, they are, in essence, involved in a taking, which they would have to pay for future use of your rights, your property use rights. And so we want to be very, very careful to protect the taxpayers, to protect an existing industry who has existing rights, and a history and culture that is as important to the west as timber, mining, and recreational and aesthetic use of our resources.

These uses do not need to be mutually exclusive. And as Teddy Roosevelt envisioned, when these use rights are used in a compatible manner, it really does and can establish forest health and an ongoing sustained forest, as well as ongoing and sustainable industries.

I share with you that concern. I share with all of you that concern.

And I wanted to ask you about Alternative 2 that states in the guidelines that "Guidelines will apply to grazing only at the location where resource management activities are ongoing for fuel break construction, only at the time they are going on." Now, is that comfortable language for you?

Mr. O'SULLIVAN. That helps somewhat. It has been our experience that there is a difference between the way it is spelled out and the way it is actually implemented on the ground. What our concern is that they will have riparian areas all through the forest, and we won't be able to move these cattle, to manage these cattle, out on that range because they will have some sort of a resource activity out there.

They will create something that, whether it is genuine or not, we could be at risk. We are not concerned with the genuine. We are concerned with the non-genuine, the subjective opinion that a riparian area doesn't meet riparian objectives. And, therefore, we are going to not be able to move the cattle through for that area.

That is close. That is helpful. But we would like to see stronger language.

Mrs. CHENOWETH. And traditional established rights of way need to be maintained. Another concern that I want to bring up for the record is that resource management ongoing that are ongoing because of fuel break construction could be studies for fuel break construction.

So I want to make sure that the agencies do not say because we are studying in allotment number 1, allotment number 2, and allotment number 3—and those are all three of your allotments, Mr. O'Sullivan—you are not able to allow any of your cows to be involved in grazing in any of your allotments.

Now, that is a worst case scenario. But I think it is incumbent upon us to be able to see down the pike that this could happen, and I do not want that to happen. Period. And I know that we need to have you involved in the QLG process and involved in the environmental assessment process.

I don't know whether it will be you yourself or who it might be, but it is important to have cattlemen's involvements with a clear understanding that you come in with a unique set of circumstances, different from other users. You come in with established rights. So I will be watching this very carefully. And I, through my comments, want to also ask other members to watch this very carefully.

Mr. Stewart, I was not able to review your testimony before you gave your oral testimony. I will be giving you written questions. And if you don't mind responding within 10 working days of receipt to our questions, I would appreciate it very much.

Mr. Herger, do you have any other comments or questions?

Mr. HERGER. Well, only I want to thank all of you here. You are—the ones sitting here representing our counties, our wood products, and our cattlemen, are certainly some—and the State of California has done such a great job of helping fight fires over the years and working with and protecting our homes and structures and others.

I want to thank you for your involvement. Again, this is a five-year pilot plan that we are going to be working on. And I can assure you I will be monitoring this if not on a daily basis, very, very regularly. My door is open to each of you. We want to make sure that this works.

And I know there has been a lot of ongoing concern with the cattlemen, and I want you to know, Dick, that I will continue working with you, and each of you. As we see challenges arise, I want to be there to work with you to work those challenges out.

So, anyway, I thank each of you for appearing before us today and your overwhelmingly strong, positive involvement in this process. Thank you.

Mrs. CHENOWETH. I also have about—both Mr. Herger and I have about 10 other questions for each of you that we would like to ask. Time does not permit us to do that. And so as with Mr. Stewart, we will be sending you written questions. If you wouldn't mind responding within 10 working days, I appreciate that.

Thank you so much for your very valuable testimony.

While this panel is leaving, the Chair will call Mr. Brad Powell, Acting Regional Forester, Region 5, U.S. Forest Service, Vallejo, California, to the witness table. He will be accompanied by Mr. Mark Madrid, Forest Supervisor of the Plumas National Forest, and Mr. Mike Spear, Manager, California/Nevada Operations Office, U.S. Fish and Wildlife Service, Sacramento, California.

Gentlemen, as you have heard me explain before, we ask all members to rise and take the oath.

[Witnesses sworn.]

Mr. Powell, we recognize you for your testimony.

STATEMENT OF BRAD POWELL, ACTING REGIONAL FORESTER, REGION 5, U.S. FOREST SERVICE, VALLEJO, CALIFORNIA

Mr. POWELL. Thank you. Madam Chairman and members of the Subcommittee, thank you for the opportunity to discuss the Herger-

Feinstein Quincy Library Group Forest Recovery Act. I am accompanied today by Mark Madrid, Forest Supervisor of the Plumas, here on my end, on my left, and Mike Spear, Manager of the California/Nevada Operations Office of the U.S. Fish and Wildlife Service.

Since the enactment of the Act, we have been committed to the successful implementation of its provisions. Many Forest Service employees have worked diligently with the Quincy Library Group, the community, Congress, and others to accomplish this task. With the signing of the record of decision for the final environmental impact statement on August 20, 1999, we are now ready to move forward with the implementation of the pilot project.

The Act requires the Secretary of Agriculture to conduct a pilot project for a period of up to five years. To accomplish the purpose of the Act, resource management activities are required that include fuel break construction, consisting of strategic system—a strategic system of defensible fuel profile zones, group selection and individual tree selection harvest, and a program of riparian management and riparian restoration projects. All of these activities will be conducted consistent with environmental laws.

The pilot project will test the effectiveness of resource management activities designed to meet ecological, economic, and fuel reduction objectives on national forest system lands in the Plumas, Lassen, and Tahoe National Forests. The pilot project area includes 2.4 million acres. Approximately 900,000 acres are off base, deferred, or otherwise unavailable as defined by the Act, leaving 1.5 million acres for implementation of the pilot project activities.

The final environmental impact statement describes a proposed action and four alternatives. More than 10,000 comments were received on the draft environmental impact statement. The FEIS discloses the expected environmental consequences of implementing the pilot project. The FEIS also addressed the comments received and analyzed as a part of the public involvement process.

The record of decision amends the forest plans for the Plumas, Lassen, and Tahoe National Forests, and identifies the alternative selected by the Forest Service and the rationale for its selection. Alternative 2, as modified, was selected. The decision will implement a strategy to reduce wildfire, while protecting California spotted owls and other wildlife associated with old growth forests.

Alternative 2 was modified so that no timber harvesting will be permitted in suitable owl habitat until the Forest Service establishes a long-term California spotted owl strategy for the Sierra Nevada that allows such an activity. This modification essentially defers treatment on an additional 420,000 acres.

The California spotted owl habitat protection strategy is not projected to last for the duration of the pilot project. When a new California spotted owl habitat management strategy is adopted as a result of the Sierra Nevada Framework Project, it will take the place of the approach described above and apply for the remainder of the pilot project period.

The Forest Service will begin the environmental analysis and documentation process required by NEPA for projects that implement this decision. We will prioritize the implementation of those projects that are currently being planned and that are consistent with the decision. We will focus initially on watersheds with a high resource priority and known fire risk problems.

I would like to discuss for a moment our plans for some of the specific resource management activities required for implementing the decision.

Alternative 2 includes 40- to 60,000 acres of fuel reduction each year for five years, through a strategic system of fuel profile zones. A fuel profile zone includes shaded fuel breaks, thinnings, and individual tree selection cutting. These zones will be designed to avoid the approximately 62,000 acres of suitable owl habitat that are estimated to exist within the fuel break areas, until new owl guidelines are developed.

Alternative 2 also includes 8,700 acres of small group selection treatments per year, resulting in the removal of trees and small openings in the forest of one and a half to two acres in size. These will be scattered across the landscape and are intended to provide multi-storied forest stands of different age classes which would mimic stand structures developed under natural fire regimes. These may, where appropriate, be used in conjunction with defensible fuels profile zones.

Riparian/aquatic ecosystem protection will be enhanced through a riparian management project. Examples of proposed projects include wide protection zones and restoration projects such as meadow restoration and vegetative plantings. These projects will be consistent with the Scientific Advisory Team guidelines as directed in the Act.

A Scientific Review Team appointed by the Secretary of Agriculture will assess the success of implementing actions in meeting the objectives outlined in the Act. The monitoring strategy will provide information to managers to be used in applying the principles of adaptive management, and it will assist the agency and the public in gauging the success of resource management activities in achieving resource objectives.

In summary, we are committed to implementing the decisions made for the Herger-Feinstein Quincy Library Group Forest Recovery Act, while ensuring protection of California-spotted owl habitat and habitat for other old growth dependent species. The selection of Alternative 2, as modified, will implement the law while complying with all other environmental laws.

We are also committed to monitoring the project to ensure that restoration activities are in compliance with environmental protections, and to assess the overall effectiveness of the pilot project.

This concludes my written statement. I would be happy to answer any questions that you or members of your subcommittee may have.

[The prepared statement of Mr. Powell follows:]

Mrs. CHENOWETH. Thank you, Mr. Powell.

And the Chair recognizes Mr. Herger for his questions.

Mr. HERGER. Would you prefer to have Mr.——

Mrs. CHENOWETH. Of course, yes. Yes. I didn't realize that.

Mr. Spear, please proceed.

STATEMENT OF MIKE SPEAR, MANAGER, CALIFORNIA/NEVADA OPERATIONS OFFICE, U.S. FISH AND WILDLIFE SERVICE, SACRAMENTO, CALIFORNIA

Mr. SPEAR. Thank you, Madam Chairman, Mr. Herger. Thank you for the opportunity to present testimony on the Fish and Wildlife Service's involvement with the Forest Service environmental impact statement, as it relates to the QLG Forest Recovery Act.

After the listing of the northern subspecies of the spotted owl in the Pacific Northwest as threatened, Region 5 of the Forest Service in San Francisco and the Fish and Wildlife Service began informal discussions regarding the status of the California subspecies of the spotted owl and the need to develop a comprehensive range-wide management strategy to provide for the owl's long-term viability and to preclude the need for listing.

In 1992, the Forest Service published a technical assessment of the owl's status and provided an interim three- to five-year management strategy for the species. In 1998, the Forest Service engaged the Fish and Wildlife Service in a cooperative and collaborative process known as the Sierra Nevada Framework for Conservation and Collaboration.

The framework's purpose is to amend existing plans for the 11 national forests in the Sierra Nevada to provide consistent regional land management planning direction incorporating the most recent scientific information. The framework will develop conservation strategies for a number of non-listed species to provide long-term viability of species of concern now at risk in the Sierra Nevada.

When completed, any conservation strategy developed in the framework process will apply to all national forest lands in the Sierra Nevada, including those in the area covered under the QLG Forest Recovery Act.

Concurrent with the framework planning process, in March 1999, we signed an interagency agreement with the Forest Service detailing our participating in the QLG effort. Our involvement was to ensure that the implementation of the QLG Forest Recovery Act would promote the survival and recovery of federally-listed threatened and endangered species and the viability of non-listed, at-risk species, thus precluding the need for their listing.

While working on the DEIS, Fish and Wildlife Service identified several concerns regarding the potential effects of the project on federally-listed species and on the long-term viability of old growth forest-associated species of concern, such as the California spotted owl and the Pacific fisher.

These concerns focused on potentially significant reductions in suitable nesting, denning, foraging, and dispersal habitat, habitat fragmentation, changes in prey population, and introduction of non-native plant and animal species.

In meetings with the Forest Service staff, the Service identified concerns about the DEIS and potential adverse effects on the long-term viability of the owl and other species. These discussions continued after the DEIS was issued, and Fish and Wildlife Service provided detailed comments and recommendations to minimize these effects.

Prior to issuance of the record of decision and final EIS, Fish and Wildlife Service was able to concur that the FEIS, as modified, was not likely to adversely affect listed species. The Fish and Wildlife Service and the Forest Service have also agreed to work cooperatively in an early consultation and coordination capacity on site-specific projects to determine whether federally listed species and species of concern would be impacted by proposed actions.

The administrative boundaries defined in the QLG Forest Recovery Act encompass a significant portion of the range of the California spotted owl in the Sierra Nevada, representing approximately 30 percent of the owl's known California locations. Detailed studies in four areas of the Sierra Nevada, including one within the Lassen National Forest, have been conducted to calculate the rate of population change for California spotted owls. These calculations take into account survival and reproduction of owls.

Numbers of California spotted owls are declining, as evidenced by population calculations and decreases in the number of occupied sites for all four study areas in the Sierra Nevada. Although cause and effect reasons for these declines have not been scientifically demonstrated, studies suggest that weather and habitat are important factors influencing the viability of the species. Habitat maintenance is essential because excessive loss of key landscape habitat components, such as mature and old growth forest, can exacerbate the effects of unfavorable climatic conditions on survival.

Although landscape analyses linking habitat, survival, and reproduction of owls have been conducted for northern spotted owls, they have not been completed for California spotted owls. Directly extrapolating specific results from studies of northern spotted owls to California spotted owls in the QLG Forest Recovery Act project area is not appropriate due to differences in prey base and habitat quality.

As a result, uncertainty remains over how much suitable habitat is needed at the landscape scale to promote long-term viability. Such analyses, however, are in progress to develop and/or refine a conservation strategy for the California spotted owl for the Sierra Nevada framework. Pending these results, we believe that any project occurring prior to the completion of this strategy should not foreclose future management options.

The Fish and Wildlife Service and the Forest Service have worked together to modify the proposed action so it is consistent with the National Forest Management Act's viability regulations and the QLG Forest Recovery Act. We believe this modification will ensure the long-term viability of the owl and the maintenance of suitable habitat until a long-term regional conservation strategy is developed through the Sierra Nevada Framework this fall.

Thank you again for the opportunity to present this testimony. This concludes my prepared remarks, and I will be glad to answer any questions.

[The prepared statement of Mr. Spear follows:]

STATEMENT OF MIKE SPEAR, MANAGER OF CALIFORNIA-NEVADA OPERATIONS, FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR

Thank you for the opportunity to attend today's hearing and present testimony on the Fish and Wildlife Service's involvement with the Forest Service's Environmental Impact Statement as it relates to the Quincy Library Group (QLG) Forest Recovery Act.

After the listing of the northern subspecies of the spotted owl in the Pacific Northwest as threatened under the Endangered Species Act of 1973 (ESA), Region 5 of the Forest Service and the Fish and Wildlife Service (FWS) began informal discussions regarding the status of the California sub-species of the spotted owl and the need to develop a comprehensive, range-wide management strategy to provide for the owl's long-term viability, and to preclude the need for its ESA listing. In 1992, the Forest Service published a technical assessment of the owl's status, and provided an interim (three to five year) management strategy for the species. Because the California spotted owl is not a federally listed species, the Forest Service did not immediately confer with FWS regarding the adequacy of the proposed management strategy.

In 1998, after several attempts to produce a comprehensive conservation strategy for the California spotted owl, the Forest Service engaged FWS in a cooperative and collaborative process known as the Sierra Nevada Framework for Conservation and Collaboration. The Framework's purpose is to amend existing plans for the eleven national forests in the Sierra Nevada to provide consistent, regional land management planning direction incorporating the most recent scientific information. The Framework will develop conservation strategies for a number of non-listed species to provide long-term viability of species of concern, now at risk in the Sierra Nevada. When completed, any conservation strategy developed in the Framework process will apply to all national forest lands in the Sierra Nevada, including those in the area covered under the QLG Forest Recovery Act.

Concurrent with the Framework planning process, the Forest Service asked FWS for technical assistance in the development of a Draft Environmental Impact Statement (DEIS) to implement the legislation contained in the QLG Forest Recovery Act. In March 1999, we signed an interagency agreement with the Forest Service detailing our participation in the planning effort, and the roles and responsibilities of each agency. Our involvement was to ensure that the implementation of the QLG Forest Recovery Act would promote the survival and recovery of federally-listed threatened and endangered species and the viability of non-listed, at-risk species, thus precluding the need for their ESA listing.

While working on the DEIS, FWS identified several concerns regarding the potential effects of the project on federally-listed species and on the long-term viability of mature forest associated species of concern, such as the California spotted owl and Pacific fisher. These concerns focused on (1) potentially significant reductions in suitable nesting/denning, foraging and dispersal habitat, (2) habitat fragmentation, (3) changes in prey populations, and (4) introduction of non-native plant and animal species.

In meetings with Forest Service staff, FWS identified concerns about the DEIS and potential adverse impacts on the long-term viability of the owl and associated forest species. These discussions continued after the DEIS was issued, and FWS provided detailed comments and recommendations to minimize these effects. Prior to the issuance of the Record of Decision and Final EIS, FWS was able to concur that the plan, as modified, was consistent with the basic provisions of the QLG Forest Recovery Act and not likely to affect listed species. The FWS and the Forest Service have also agreed to work cooperatively in an early consultation and coordination capacity on all site-specific projects to determine whether federally listed species and species of concern would be impacted by proposed actions.

The administrative boundaries defined in the QLG Forest Recovery Act encompass a significant proportion of the range of the California spotted owl in the Sierra Nevada, representing approximately 30 percent of the owl's known California locations. Detailed studies in three areas of the Sierra Nevada, including one within the Lassen National Forest, have been conducted to calculate the rate of population change for California spotted owls. These calculations take into account survival and reproduction of owls.

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As a result, uncertainty remains over how much suitable habitat is needed at the landscape scale to promote long-term viability. Such analyses, however, are in progress to develop and/or refine a conservation strategy for the California spotted owl for the Sierra Nevada Framework. Pending these results, we believe that any project occurring prior to the completion of this strategy should not foreclose future management options. The FWS and the Forest Service have worked together to modify the proposed action so it is consistent with the National Forest Management Act's viability regulations and the QLG Forest Recovery Act. We believe this modification will ensure the long-term viability of the owl and the maintenance of suitable habitat until a long-term regional conservation strategy is developed through the Sierra Nevada Framework this fall.

Thank you again for the opportunity to present this testimony. This concludes my prepared remarks, and I will gladly answer any questions that you might have.

Mrs. CHENOWETH. Thank you, Mr. Spear.

I now recognize Congressman Herger for his questions.

Mr. HERGER. Thank you, Madam Chair.

And I want to thank each of you—the Forest Service, the Fish and Wildlife—Mr. Powell, I remember when we were having some challenges at one point here a few months ago with consultation how you were back in Washington. I remember meeting with you just off the Ways and Means hearing room there, and I want to thank you for that. You went right to work, and we were able to solve those problems.

We were able to get together, and I want to thank you and the Forest Service for working. We have had some other challenges, again, with the—in the other area. And, Mr. Spear, I want to thank you for your involvement. I know what I am saying I am also—I am not going to speak for Senator Feinstein, but I know I have heard her mention her appreciation for working together to—so that now we can begin the implementation of this legislation again.

I don't know if we can say it too much. I have been in Congress—now my 13th year—I don't know if I have ever seen an issue that has been so controversial, but yet on the final—and was debated for three hours on the House floor, but in its final vote I go out 429 to 1. That really I think says a lot.

Mr. Powell, when is your first QLG project going to be implemented? And what is our plan?

Mr. POWELL. Well, let me try and answer that, and then I may ask Mark Madrid to actually comment on that. But we will start the individual analysis of those projects very promptly. I think we all know we have an appeal period to go through, and the document itself becomes available to the public I believe on September 3rd. There will be a 45-day appeal period, and we will hope to start our analysis of projects very promptly thereafter.

The actual implementation to some degree depends on what happens in appeal of this EIS, and certainly if any litigation were to occur at some point in time.

Mark, any other comments on that?

Mr. MADRID. I think the only thing I would add is that we have already begun some of the exact same things that Mr. Terhune brought up about looking at where we are, with the updating of maps, seeing what the effects are, we'll see what that decision is.

And then just one thing for Brad is we are beginning to mail copies of the final EIS already, and we do have a few available here today, too, if some of you have requested a copy.

Mr. HERGER. Maybe you are beginning to answer this. Can we start this before the appeal period runs? It sounds like we have started some things.

Mr. POWELL. I think we can start the planning, certainly, of projects. It is the actual on-the-ground implementation that can't start. We would not implement any of the projects on the ground until that appeal went through. But we certainly can start the planning and have.

Mr. HERGER. What schedule have you developed for your first year of QLG? And, well, follow up with, how many acres do you—will you do in 1999 and in 2000?

Mr. POWELL. Well, let me try and answer you, and those are difficult questions to answer because they are budget based. Particularly for this year, if we look at the current level of funding, we have received about half the funding to implement the full project.

So if—and there is not a direct relationship to the dollars and exactly the acres, but based on our current estimate, if we were to look at half the budget, I would say we are going to implement about half the acres. Now, obviously, we don't have a final budget in place, and there are some other things that may change that.

We have not developed a detailed schedule of analysis yet, but that is the very activity that the forests are starting to look at—where they are going to plan, how they can avoid spotted owl habitat, and which particular projects to begin with.

Mr. HERGER. Will you be having QLG assist you in this?

Mr. POWELL. I think we will be having not only QLG but the public assist us in this. As you well know, there are a variety of groups—Cattlemen's Association, certainly some of the conservation groups, and certainly the QLG Group will be interested in being involved in it.

And then it is an open public process because we will follow NEPA, and we will go through individual analysis, so everyone that is interested will have an opportunity to participate.

Mr. HERGER. Now, let us see, the full budget was, what, $12 million?

Mr. POWELL. I think for this year we have got about $12 million. I think the full estimated budget to do the total is around $25 million, as I recollect.

Mark, is that accurate?

Mr. MADRID. Yes, that is correct.

Mr. HERGER. Now, that is for the five years?

Mr. POWELL. No, it is—that is an annual estimate.

Mr. HERGER. Of how much it will take?

Mr. POWELL. If you would like, we can furnish you——

Mr. HERGER. Okay.

Mr. POWELL. [continuing] our most recent cost estimates and even reference back to the earlier cost estimates that were made.

Mr. HERGER. And my understanding is that the earlier cost estimates were lower than what you are mentioning. Is that correct?

Mr. POWELL. That is not my recollection. But, again, let me furnish you that detailed information, both what the original estimates are and what they are currently.

Mr. HERGER. Again, we want to be working with you, if need be, day by day.

Mr. POWELL. We will furnish you that updated information.

Mr. HERGER. To make sure you have what is needed.

I guess my concern is, you know, we have heard different numbers—$12 million, $8 million. You mentioned $12 million you thought you had. I think there is at least $8 million. I hope we are not raising this bar so high that we are——

Mr. POWELL. The remainder of the budget and the reason—and, again, we will furnish that to you—but we have some carryover dollars from last year. I think, as you recollect, we only spent the dollars to do the EIS, so the remainder of that funding we still have available. When you add that to what we at least anticipate in this year's budget, our current estimate of two are around $12 million.

Mr. HERGER. Now, you will be able to use timber dollars also, is that not correct, from timber accounts?

Mr. POWELL. Certainly so.

Mr. HERGER. So, again, I think the point of, again, one of the purposes of this oversight hearing is to be able to work with you and work out any perceived or any problems that we see, potential problems out there, to make sure that we are doing what we need to do. And that five years may sound like a lot of time, but, I mean, five years will come and go very quickly. So it is very important that we not waste any time.

Mr. POWELL. I will provide you a very clear picture of that budget analysis.

Mr. HERGER. Thank you. Do you have the number of acres that you are targeting for 1999, the rest of this year, and for next year, 2000?

Mr. POWELL. Well, I don't know that we have broken down specifically the EIS, again, because that is a part of the analysis. We are projecting to do 40- to 60,000 a year. I think the EIS projection DFPZs—it will be around 216,000 acres throughout the life of the project. But again, site-specifically, as George Terhune and others mentioned, we are going to try and adjust some of those to miss more habitat. But we plan to be in that 40- to 60,000 range, dependent upon budgets, of course.

Mr. HERGER. Okay. And we will be working with you to somehow ensure—this is a high priority of ours, was of the last Speaker, I might mention, as well as our current Speaker of the House—to see to it that we—you have the resources you have to implement this.

Will QLG projects generate the net revenue to the Treasury, and how much?

Mr. POWELL. Well, certainly, they will produce revenues to the Treasury. The estimates that are in the EIS that have already been talked about today are our best estimates. Now, again, I think all of us know in the marketplace it is pretty hard for us to exactly project the revenues. Those are the estimates based on history. That is what we hope to be able to receive.

But, again, there will be fair, open competition for the products that we sell, and we won't know exactly whether there is profit in that until we actually see the actual receipts.

Mr. HERGER. But as in historically we have returned—not recently, but at least historically, we actually have returned a profit to the Treasury, I think from some testimony we had from Mr.

Frank Stewart, I know I think he used the—I forget, a number of a dollar put in, $1.38 out. But it—so——

Mr. POWELL. The real challenge—and certainly, those are our best estimates. But, again, when you—I am not an accountant, and the accountants could have a field day trying to explain this. But, obviously, those are looking at more benefits than just to the government. There are other benefits much beyond just us.

What it costs us to prepare the sale and what we actually receive in is one set of figures. Then you start to look at some of those secondary benefits in the community, and that is obviously a much larger figure.

Mr. HERGER. And that is really a bonus, but that was not really what this was directed to. It was forest health.

If the Sierra framework is not completed, will the QLG plan stand five years as Congress intended?

Mr. POWELL. If the Sierra Nevada Framework isn't completed, really, the tie is not just with the framework; it is a tie back to the work with the Quincy bill—is really the spotted owl direction for the future. I am confident that we will develop a range-wide spotted owl direction either through the framework, through other processes, or potentially even the listing of the owl. I would hate to see it come that way, but if there were a listing decision made on the owl, then, again, we would have other processes in place.

So I don't know that I answered you directly. I anticipate that we will have new spotted owl direction across the range of the spotted owl in California that will, in essence, allow the project, the Quincy project, to move forward with that new direction. I hope it comes through the framework. That is our current plan. I see no reason that we won't succeed at that.

Mr. HERGER. I just have to interject at this point that when we have catastrophic fires, which this QLG is working to help prevent, there isn't any habitat. It is 100 percent destroyed. So hopefully our—one of our major goals is to preserve habitat.

Mr. POWELL. Just to comment on that, because certainly we recognize that, Fish and Wildlife Service recognizes that. That is one of the significant challenges in the framework is to look at different management scenarios that provide the protection of habitat, provide economic benefits, at the same time result in a forest that is healthy and can sustain itself against fire. That is a tough, complex issue to resolve. That is exactly what the framework is trying to take a look at.

Mr. HERGER. And, Mr. Spear, isn't this our problem as we have these catastrophic fires around is that we are completely destroying, for maybe a hundred or a couple hundred years, this habitat of the owls and others completely?

Mr. SPEAR. I couldn't agree with that more, and I think that has been one of the misunderstandings about perhaps the view of the Fish and Wildlife Service and the role of the Endangered Species Act, is that we have to take that into account. That is a factor that is out there in the landscape, and it is one of the overall, most devastating factors.

Before I came down to Sacramento, I was up in Portland involved in the Upper Columbia Basin Project. And, of course—well, that hasn't gotten finally completed yet. It was the fundamental issue up there in the—Mrs. Chenoweth's area, that—and the same dilemma was faced, and that is, how do you deal with the fire factors while also dealing with the other concerns? In that case, both trout and salmon being one of the largest issues.

Where we are down here, if I were, you know, to go on a second, is that just as Brad has said, we feel we are near bringing this new science out to the public, having that debate, that review that QLG members talked about earlier, and then that will lead us to some new prescriptions.

One of the things I am most pleased about in working with the Forest Service on this in the last few months is their strong desire, along with ours, to try to do something that will not, you know, precipitate or increase the probabilities of a listing.

I think they have taken a very appropriate attack here because we are—as I say, we are close to having the new science put on the table for all to see the data discussed and hopefully come out with something that says, "This is the best way to balance these various factors."

Mr. HERGER. Well, thank you. And, of course, our concern is that if we are, for whatever reason, not able to actually implement this QLG plan, which, again, I believe and many believe is historic and perhaps one of the first times, if not the first time, that we are actually trying to come up and plan for the entire picture, that we have lost an incredible opportunity that we may not see again.

Mr. Powell, in modeling for fuel breaks, I understand that there were no large fires considered in the modeling?

Mr. POWELL. Let me try and explain what was done there.

Mr. HERGER. Would it make EIS selecting Alternative 2 more defensible if the modeling considered the type of large fires that occur in these forests?

Mr. POWELL. Let me try and explain, and we have had extensive conversations with members of the Quincy Group and our own technical team on that. I might ask Mark to comment when I am done.

The challenge that we have here is we have utilized the best fire experts that we have available, and we used the latest models that we have available. We tried to make those models work the way that we think they best would mimic nature. And I think the results that we got out of those are purely defensible, they are scientifically defensible.

I do think we all recognize that models are not perfect, and we in the framework, in particular, are trying to develop a new model using the best scientists that are available. We simply didn't have that available for the Quincy Project. I do think it was modeled appropriately. I think it shows very well the difference between alternatives.

Is there some potential you could have had bigger fires? Certainly. And we certainly recognize that. But we didn't try to artificially constrain it. We tried to use assumptions that we think are realistic, and then allow the model to output what would happen.

The important part of the model isn't the exact number; it is in comparing between alternatives, because you use that same model in every alternative. That is what was important to us.

Mark, you may want to comment on the technical side of it.

Mr. MADRID. Yes, I think that pretty much covers it. One of the things that happen as we do site-specific EAs, the modeling will be more accurate for smaller areas as we do that. So from that standpoint, we will still use the best available science, the most accurate models to do that, as we do the site-specific projects.

So it is kind of a double way of looking at that, getting an estimate of the true fire risk we have in certain areas.

Mr. HERGER. Thank you.

Madam Chair?

Mrs. CHENOWETH. Thank you, Mr. Herger.

Mr. Spear, I wanted to ask you about the owl population. I have received comment and testimony in my committee in Washington that actually the Northern California spotted owl's population was probably greater than that which was in pre-Columbian times.

And I remember that being a significant piece of information to me because I wondered how they measured the population in pre-Columbian times. And now I hear testimony that you have given that the owl population is again in decline.

Mr. SPEAR. You are right.

Mrs. CHENOWETH. Go ahead.

Mr. SPEAR. You started out—you are speaking about the northern spotted owl, and then——

Mrs. CHENOWETH. Northern California spotted owl.

Mr. SPEAR. I was speaking about the California spotted owl. The reports are now, the information that is emerging, is that there is a decline in the four different study areas that they have looked at. There are different amounts, and I think that the sample set is probably not large enough to draw good numbers about exactly the rate of decline.

But the general sense among the scientists is that it is in decline. And if it continues in that way, there is a debate over the reasons why. How much of it is related to habitat is part of that debate.

But I think as the information, you know, comes out and becomes more public, I think it will be pretty clear that the sense of the scientists is that it is in decline.

Mrs. CHENOWETH. Gosh. No wonder it is so hard to implement these programs, because we see testimony coming from top people in the agency that contradicts itself from one month to the next. And I think that is in large part what Mr. Jackson was talking about. So it is very difficult to plan.

What is the difference between the Northern California spotted owl and the other spotted owls?

Mr. SPEAR. The differences are——

Mrs. CHENOWETH. Existing in California.

Mr. SPEAR. The northern spotted owl is along the coast, and basically a cutoff line from about Redding heading to the east and then toward that area around the north in the—and then down along the coast into Encino County, and then it joins up with Oregon and Washington.

The difference is, well, when the ornithologists get together they look at fine differences, and they have cited that there is a different subspecies in the California basically south of here, in the Sierras and down into Southern California.

If you wanted to get some—the fine details on the differences as they reported them in their taxonomic literature, I would like to provide that in writing because I am not——

Mrs. CHENOWETH. Well, I——

Mr. SPEAR. [continuing] aware of those details.

Mrs. CHENOWETH. I would be happy to look at their taxonomic literature. But the fact is isn't the—doesn't the statute require—and the guidelines that have been promulgated—require it to be a genetic difference, not a geologic difference? And aren't the ornithologists looking at a geologic——

Mr. SPEAR. Geographic.

Mrs. CHENOWETH. Geographic difference?

Mr. SPEAR. No. These will be differences as—that are not just geographic.

Mrs. CHENOWETH. But gene pool is found to be different?

Mr. SPEAR. Whether they have used data like, you know, the sizes of bones or different colorations, there is different types of things that they use. And prior to, you know, sort of modern examinations of genes and getting down into the DNA that they can do now, they used other features to make these distinctions between subspecies.

But it is a clear subspecies that has been approved in the taxonomic literature through the peer review process. And, therefore, it is treated differently, and that is why it is not listed now along with the northern spotted owl.

Mrs. CHENOWETH. Can these subspecies reproduce?

Mr. SPEAR. Yes.

Mrs. CHENOWETH. They are able to produce offspring.

Mr. SPEAR. Yes.

Mrs. CHENOWETH. That are——

Mr. SPEAR. And there is a——

Mrs. CHENOWETH. ——[continuing] genetically identical to both parents?

Mr. SPEAR. There is a gradation, there is an area of blending basically to the east of here where the two—the two probably interact to a very small degree.

Mrs. CHENOWETH. I still wonder how they can determine how many Northern California spotted owls are in existence before Columbia—before Columbus hit the east coast.

Mr. SPEAR. Well, I believe that is probably is a pretty good question.

Mrs. CHENOWETH. And your answer, I would assume, is they don't know, really.

Mr. SPEAR. They don't know really. But I suspect they looked at basically the amount of habitat and the basic—the home range size for a pair and made some determination and then calculated how much might have been disturbed by other factors at any one time. But I don't know how useful the number is.

Mrs. CHENOWETH. Tell me, Mr. Spear, isn't it logical to conclude that probably a number of owls have also been destroyed in the massive fires, and they have possibly declined because their habitat has been destroyed?

Mr. SPEAR. Absolutely.

Mrs. CHENOWETH. That they themselves have been——

Mr. SPEAR. We wouldn't argue that a bit.

Mrs. CHENOWETH. And so, then, wouldn't that lead us to conclude that implementation of programs such as the QLG legislation and that program would actually enhance the owl population?

Mr. SPEAR. Well, I think that is where you get into the fine line as we look at the new science. The decision made by the Forest Service I think is to some extent based on the proximity in time of the new science coming forward. I would suspect it might have been different if they thought we were years away from having anything out there in the public to draw upon to develop a new formula for prescriptions.

But the sense of people is that the new information will be brought forth relatively quickly, that debate that was talked about for the QLG members will take place, the framework discussion will examine that, and we will look at what is needed, both at more local levels and across the range for the owls.

And it is that balancing—Fish and Wildlife Service is not saying, for instance, has not said that nothing can be done in suitable habitat. But we were not confident with the amount of the treatment and the degree of the treatment within suitable habitat as contemplated by the unmodified option 2.

We had a sense that it would definitely take it below what is suitable for the owl, and the question is maybe there is—you know, I use the term "a lighter touch" that could take place in suitable habitat that will serve most of the purposes of a defensible fuel zone but also maintain the habitat for the owls. And so it is that fine tuning that I think we are looking for as we reach—look at these common objectives of owl preservation and fire protection.

I think that is where we are, and it is not far off.

Mrs. CHENOWETH. I would like to ask Mr. Terhune or Mr. Jackson to respond to that particular—or, Mr. Murphy, you are still here—any one of you to be able to respond to that point. Would one of you—would you please come to the mike?

Mr. MURPHY. I believe there is at least a combination of answers here that is kind of unique. Mr. Powell told us that we don't yet have models that deal with the large fires. So the question is: what data did the Fish and Wildlife Service use to determine the impact differences? They used the models that don't deal with the large fires.

So the modeling data provided by the Forest Service said there was 2,000 acres of potential owl habitat saved by Alternative 2, as compared to the other alternatives. Well, every one of those fires on that map today has the potential to do well beyond 2,000 acres of damage to the owl. That data was not in the Fish and Wildlife Service's analysis.

So the model issue is very important if large, catastrophic fires are a likelihood in these forests, and we can look at potentially, in a three-day time period, losing 50- or 60,000 acres of suitable habitat. Then this issue of model is an extremely important one because it would then give the Fish and Wildlife Service a data set of risk that is substantially higher. And a program like the Quincy Library Group program that substantially alters that risk would then actually be viewed as a very positive thing to do for owls.

So it is sort of a combination. The science on the modeling is not there yet. The evidence on the map is, which is that we have had 100,000 acres of habitat burned up in the last seven years in catastrophic events. And that was not taken into account in the analysis of viability of the alternatives relative to owl habitat impact.

Mrs. CHENOWETH. Mr. Murphy, Mr. Spear, and Mr. Powell, I want to ask all three of you, how could we get this data set into the model to make the model accurate and workable?

Mr. MURPHY. I think you are talking about the fire model, and that is not my expertise. So I will——

Mrs. CHENOWETH. Mr. Powell?

Mr. MURPHY. ——[continuing] pass it to Brad.

Mr. POWELL. Let me try again, because I don't want to get into a modeling analysis process here. I think the dilemma we have is we recognize that the model that we are utilizing is the best—simply the best model that is available. We also recognize that anytime you are trying to project wildfire that there are some uncertainties to that.

Now, the contention that we have somehow kept these fires or the potential of fires from being large, catastrophic fires is simply not accurate. It is just that we have, when we plugged in the assumptions we think are accurate, the amount of fire that has been projected isn't as large as some of the fires that have occurred.

And we are developing a new model. That is exactly what we are utilizing in the framework, and I am quite confident when the framework is completed we are going to have the best modeling analysis that is available to us.

Mrs. CHENOWETH. Mr. Powell, for the record, I just want to make one thing very clear. We will not allocate money from the taxpayers to pay for a model that doesn't consider more than 2,000, as Mr. Murphy has pointed out, that does not have basic, objective, scientific data. We just simply cannot pay for a pig in the poke. Now, we want to be able to fund this project.

Mr. POWELL. Let me respond, though. Again, I don't believe that is exactly what he said. He can comment himself. The model didn't project that it was just going to be 2,000 acres of fire. But it projected larger fires than that.

Mrs. CHENOWETH. Mr. Murphy, would you please clarify that?

Mr. MURPHY. Yes. The model that was used did project an upward limit of a 7,500-acre fire.

Mrs. CHENOWETH. Okay.

Mr. MURPHY. And what I was talking about was the net difference in saved habitat was calculated to only be 2,000 acres of Alternative 2, compared to the other alternatives. And that is what—because of the use of these models, the difference between them, the value of the programs, was not elucidated by the models. And so this 2,000-acre savings was what the Fish and Wildlife Service said, "We can't risk 50,000 acres of owl habitat to only save two."

But when we have one fire that can take 60,000 acres out, then that analysis would be reversed. And, in fact, when questioned, they said they would, given an alternate set of data that would indicate a higher risk in terms of acres of habitat lost, they would have given a different opinion as to the viability of Alternative 2, if the analysis had led to the risk of large areas of owl habitat being lost.

That is the real problem. Hopefully, the framework will—and in answer to your last question, the SNEP scientists did do this kind of modeling, and did the process, and they suggested strongly that fuel treatments be considered, that defensible fuel profile zones be tested, because of their net benefit to saving and reducing the effects of catastrophic wildfire.

Mrs. CHENOWETH. That would make the EIS more defensible.

Mr. MURPHY. Oh, absolutely. There would be no doubt that Alternative 2 not only would have been the preferred alternative, as it is, it would also clearly have been labeled the environmentally preferred alternative.

Mrs. CHENOWETH. I think the thing that we are—that I am striving for, and the focus that I have, is to make sure that we have a defensible model, and one that will really work on the ground. And that is what we are going to be looking at in funding, and I want to see this budget. I want it to continue to serve as a beacon for other projects.

When we have a dispute over something as basic as a model, I become concerned then. So may I be assured of your cooperation in working with the other members of the QLG and making sure that this model is one that we can all defend, and that Mr. Herger and I can defend it on the floor of the House also?

Mr. MURPHY. Well, let me assure you this way. We are going to utilize the best scientists that are available to us in preparing this model. I think that's the best place to be in terms of a political strategy and a defensible model. We are currently contracting with some of the top scientists in the country to deal with fire issues on.

Mrs. CHENOWETH. Okay. Well, we will be watching that and working with you.

I have some questions about some of the testimony that was given earlier. We have worked very hard to get the EIS finished on time, and it was finished ahead of time. And everyone appreciates that, but there was a delay somewhere in Washington, DC, that caused you to miss the statutory deadline by a few days. Who caused the delay?

Mr. POWELL. Well, I guess in a simple sense you can say I caused the delay. I expected, and I think it is in all of our best interests to have, this be a legally defensible decision. After we had crafted the EIS and completed the record of decision, I asked for, in consultation with our leadership in Washington, to have this reviewed by both our OGC counsel and our Department of Justice folks and staff in Washington. That simply took a little longer because of complexities of the record of decision.

Mrs. CHENOWETH. Who in Washington, from the Department of Agriculture and the Department of Justice, worked on this?

Mr. POWELL. I can furnish you the names. I don't have them with me today. But we had our staff in Wildlife and our staff in Planning and then counsel from DOJ and OGC. If you would like the names——

Mrs. CHENOWETH. I would like for you to provide that to the Committee.

Now, I have a concern about the changes that occurred in the EIS. I would like for you to point out to me the specific changes that were made or suggested in the EIS.

Mr. POWELL. Well, let me try and do that in a very quick fashion, because I am not sure exactly what you mean in changes to the EIS. But in the record of decision, the primary change in Alternative 2 was an adjustment to defer or delay entry into any spotted owl habitat until we had this new spotted owl direction that we have talked about today that will be a part of the framework.

There are some other minor changes in the record of decision, but I think that is the primary one that you would be interested in. That change was made based on our view of the viability regulations under the National Forest Management Act and trying to make sure that we had a legally defensible decision that did not violate any other environmental laws.

Mrs. CHENOWETH. What I would like for you to furnish for the Committee is changes that only changed even two letters. I would like to see every change that was made during that time.

Mr. POWELL. Can I ask for a clarification? Because I am not sure—changes to Alternative 2 in the ROD, is that what you are requesting?

Mrs. CHENOWETH. Changes that were made when you were bulletproofing the EIS.

Mr. POWELL. The EIS itself had few, if any, changes in it. What we were doing was crafting the record of decision that the forest supervisors made their decision and documented with. So in the EIS—and, Mark, you may want to comment—I am not aware of any changes that were made in the EIS. There may have been some editorial. We can furnish you that.

Mrs. CHENOWETH. Would you, please?

Mr. POWELL. But the record of decision itself was being crafted. So it would be hard to tell you changes because there really was never a record of decision that would——

Mrs. CHENOWETH. Well, what new information do we have on the owls now that generated between the draft and the final of the EIS that caused the delay and these changes in the ROD? That is what I am after.

Mr. POWELL. Mike may want to comment on this as well, but we were aware—and Duane and others in the QLG Group was aware—at the time the draft came out that we had concerns about spotted owls, based on the demographic studies that were done, based on the research, based on the advice of our biologists, and based on the viability work that went into the biological assessment, even at the draft. We continued to work on that between draft and final.

Mrs. CHENOWETH. These are the changes I would like to see.

Mr. POWELL. We would be happy to furnish those for you.

Mrs. CHENOWETH. Mr. Spear, we heard testimony earlier about the California red-legged frog, and the fact that there seems to be language in the guidelines that is not specific or definitive. And as it has been explained to me through the testimony that I have heard, this in and of itself could serve to legally undo the Quincy Library Group project because it is not specific. And how did that occur? How did it—how did these unspecified, undefined pieces of language get in the guidelines?

Mr. SPEAR. Well, the red-legged frog is a listed species.

Mrs. CHENOWETH. Right.

Mr. SPEAR. So in our discussions with the Forest Service over listed species, under normal consultation procedures, we provided in this case sort of standard language about survey protocols that we would use. And the Forest Service included the language I think dealing both with their viability issues and our concerns about using appropriate survey techniques to—for appropriate conservation of the red-legged frog. And I think the fundamental thing we are talking about is that those areas that are unsurveyed need to be surveyed.

Mrs. CHENOWETH. How many areas are unsurveyed?

Mr. SPEAR. I don't know. I would be happy to try to give you some sense of that in the area. But——

Mrs. CHENOWETH. How many red-legged frogs are there? Do you know where they are?

Mr. SPEAR. They are in the foothills in the Central Valley. Their range is quite large, but they are relatively rare in certain ranges, not in other ranges. And this is sort of the northern extent of their range up in this area in the foothills in this part of the state.

Mrs. CHENOWETH. Mr. Spear, how does the red-legged frog population respond to fire?

Mr. SPEAR. How does it respond to fire? Probably depends on the nature of the fire, and, you know, what state of their life they are in, the nature of the fire that passes over. That gets into a level of detail that I would be happy to get back to you with.

Mrs. CHENOWETH. Your answers indicate to me that the lack of specificity could serve to undo the very essence of the QLG legislation and something that is a hallmark nationally. So we must—I must ask you to work very closely with the Forest Service, the QLG Group, and come up with specifics before we begin limiting activity. I am very concerned about this and will be watching it very closely.

Mr. SPEAR. I think the specifics you talk about are the types of things that come into that at the project planning stage when the project gets into that kind of detail.

Mrs. CHENOWETH. Well, I have learned while I have been in Congress that I need to look at the worst case scenario down the pike. And I would love to be comfortable with that statement, but I can't be. And so I would ask you again to have your agency work very closely with the Forest Service, QLG Group, and let us tighten up those definitions.

I would like to work with Mr. Herger to make sure that the surveys are done and completed in a timely manner, so that we don't see anything held back.

Do you have any other comments that you would like to make?

Mr. SPEAR. I will be happy to do just as you say.

Mrs. CHENOWETH. Okay. Mr. Herger, do you have any other questions?

Mr. HERGER. Maybe one last one.

Mr. Powell, will the QLG program supplant your regular timber sale program?

Mr. POWELL. I am not sure how to answer that. On those forests, this will be the primary timber sale program in the specified area. Now, certainly on the Tahoe there are other districts outside the QLG area. But in the QLG area itself, the Quincy Library Group area, it will be the primary timber sale program. It is where we are going to put our funding and our primary efforts.

Mark, would you care to comment?

Mr. MADRID. That is exactly right. This will be our vegetative management program across the board in this project area.

Mr. HERGER. And I guess just to expand the question, some 38 mills have closed in the 10 counties that I represent in the last few years. And there is—has been some concern that while we implement this program here, which is very important, that, say, outside these three national forests that perhaps budget or whatever we are doing does not somehow supplant where we are not doing the work we would normally be doing in these other areas because of this.

Mr. POWELL. But, again, that is a budget question. And it is certainly a valid issue around the state, not just with timber sales but fuels management. If we have to take and fund that out of the regional funds, without there being additional funds, it will take some of the opportunity to have timber sales or fuels management projects.

Currently, with the scenario of additional funding, it should have no impact on those other projects.

Mr. HERGER. Thank you. And that is what we are—that was the intent, was that we would give you the additional funding so that it would not supplant ongoing projects planned before the QLG became a reality. We would like, as a Congress, to see—and certainly, I, as a representative—to see them continue.

Mr. POWELL. Okay.

Mr. HERGER. Well, I have no further questions.

Mrs. CHENOWETH. Thank you, Mr. Herger.

I just have one further question, and that is to Mr. Powell. Originally, when we were working on the legislation, we actually set aside some 400,000 acres of roadless areas that were off limits to the QLG activities. My concern is: is that reflected in the EIS as a mitigation measure? I know it was a legislative mitigation measure, but is it also reflected in the environmental impact statement and the record of decision?

Mr. POWELL. The off base or deferred areas that I referred to in my testimony are reflected. I think it is actually more than 400,000. I could look up the exact thing, the exact number.

Mrs. CHENOWETH. That makes me happy.

Mr. POWELL. I think it is 800,000. Those areas are not planned for this type of treatment, either the DFPZs or the group selection. They are reflected as a part of the decision. They are a part of the overall planning of the project.

Mr. HERGER. Thank you.

Mrs. CHENOWETH. All right. We may—and I likely will have additional questions that—I do want to study the record, and I will get back to you with written questions, both of you. And I want to thank you for being here and for your testimony.

And I want to thank you ahead of time for your continued cooperation. I have peppered you with some pretty tough questions, but I want from the bottom of my heart to thank you for the cooperation that we have seen demonstrated with the QLG. And it heartens me to think that it will continue.

Thank you very much.

And, Mr. Herger, do you have any final comments?

Mr. HERGER. I do. Madam Chair, I want to thank you so very much for taking time out of your August recess to hold a hearing here in our Second Congressional District of California. We are all—certainly myself—very indebted to you for the work you have done over the several years that we have worked together on passing this legislation.

Thank you so very much for the contribution that you give not only to your district in Idaho but to us here in Northern California and to our entire nation. So thank you so very much.

I want to thank each one of our panelists this morning for being here, for everyone who has been involved in this historic legislation and plan to—for the first time, rather than just environmentalists and those in the wood products industry working—literally loggerheads, to actually come together with a plan that helps solve the problems, not just talk and fight about them, but literally come together to solve the problems.

To each of you, I am indebted, as are everyone here in our district and, again, throughout the nation. Thank you very much, one and all.

Thank you, Madam Chair.

Mrs. CHENOWETH. Thank you, Mr. Herger. You are an inspiration. You really are.

And I want to recognize our staff. I can tell you that these hearings are not easy to put together, and the detailed work that has been done really helps the Congressmen in their work. We have such able staff. I want to recognize Erica Rosenberg, who is the minority counsel, who is here from Washington, DC. I want to recognize, of course, Joanne Gibson, who is minority counsel from Washington, DC; Mike Correia, who is our subcommittee clerk; and our Court Reporter, William Rayherd, who is from Santa Rosa, California. It is a tough job and I appreciate your good work.

And I also want to acknowledge Fran Peace, who is here from Wally Herger's district office. Fran, where are you? There you are right there in the front row.

And Georgia Golling from my district office in Washington, DC. She is in the back row there.

Thank you all. You are wonderful people to work with.

And I want to thank the witnesses again for your fine testimony. And we have asked to have some questions answered, and I would appreciate if you could answer them within 10 working days.

So thank you all very much, and this hearing is adjourned.

[The prepared statement of Ms. Feinstein follows:]

[Whereupon, at 12:20 p.m., the Subcommittee was adjourned.]

[Additional material submitted for the record follows.]

Record of Decision

Record of Decision

Introduction

The *Herger-Feinstein Quincy Library Group Forest Recovery Act Final Environmental Impact Statement* (FEIS) documents the results of an environmental analysis of alternative management strategies to demonstrate and test the effectiveness of resource management activities described in the *Herger-Feinstein Quincy Library Group Forest Recovery Act of October 21, 1998* (Act). We studied the FEIS and reviewed related materials, including comments and concerns regarding the *Herger-Feinstein Quincy Library Group Forest Recovery Act Draft Environmental Impact Statement* (DEIS) published June 11, 1999. Our decision is based on all of this information.

Background

The *Quincy Library Group Community Stability Proposal of 1993;* is an agreement developed by a coalition of representatives of fisheries groups, environmental organizations, the forest products industry, citizens, elected officials, and local communities in northern California. The intent of the *Proposal* was to develop a resource management program promoting ecological health on certain Federal lands and economic health for communities in the northern Sierra Nevada. Discussions about a pilot project began in 1992 when the Quincy Library Group formed. The *Proposal* was subsequently introduced to Congress in 1997, and was enacted as the *Herger-Feinstein Quincy Library Group Forest Recovery Act of October 21, 1998* (Act).

Proposed Action

The Forest Service proposes to establish and implement a pilot project not to exceed 5 years[1] to demonstrate and test the effectiveness of management activities described in the *Herger-Feinstein Quincy Library Group Forest Recovery Act of October 21, 1998*, by amending, as needed, management direction in the Land and Resource Management Plans for the Lassen, Plumas, and Tahoe National Forests. The total acreage on which management activities are implemented is not to exceed 70,000 acres each year.

Purpose and Need

The purpose of and need for a pilot project is to test and demonstrate the effectiveness of certain resource management activities designed to meet ecologic, economic, and fuel reduction objectives on the Lassen, Plumas, and Sierraville Ranger District of the Tahoe National Forests. The Act requires the Secretary to conduct a pilot project for a period of up to 5 years from the initiation of the pilot project (Title IV, Section 401(g)(2)). To accomplish the purpose of the Act, resource management activities that include fuelbreak construction consisting of a strategic system of defensible fuel profile zones, group selection and individual tree selection harvest, and a program of riparian management and riparian restoration projects are required.

In proposing the alternatives, the agency is responding in part to an underlying purpose outlined in the *Quincy Library Group Community Stability Proposal, November 1993*, as referenced in the Act (Title IV, Section 401(b)(1)) and to concerns identified by the Public as required by Law. The underlying need for the pilot project is to fulfill the Secretary of Agriculture's statutory duty under the Act, to the extent consistent with applicable Federal law.

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[1] Reference the Herger-Feinstein Quincy Library Group Forest Recovery Act, subsection (d).

Public Involvement

On December 21, 1998, the Forest Service published in the *Federal Register* a Notice of Intent (NOI) to prepare an environmental impact statement to disclose the impacts of a pilot project as described in the Act. In December 1998 and January 1999, potentially interested parties including individual members of the public; interest groups; and Federal, State and local government agencies were contacted and offered opportunities to provide input and comment on the proposal.

By the close of the NOI comment period on January 19, 1999, 185 letters had been received. These letters expressed a range of public concerns and suggestions that were reviewed and analyzed by the Interdisciplinary Team and the Content Analysis Enterprise Team.

News releases announcing the NOI and upcoming public meetings were sent to news agencies throughout northern California, individuals on the Lassen, Plumas, and Tahoe National Forests' mailing lists, and individuals on mailing lists comprising names and addresses submitted by the public in December 1998. Meetings were held with the Quincy Library Group, local governments, Federal and State agencies, environmental groups, and tribal representatives between January and April 1999. Public information meetings were hosted by the Lassen, Plumas, and Tahoe National Forests at Loyalton, Blairsden, Quincy, Greenville, Oroville, Chico, Burney, and Chester, California between January 4 and 16, 1999. Two scoping workshops were also held in Susanville and Quincy, California on January 16, 1999. Open houses were held in Chico, Susanville, and Quincy, California on February 24 and 25, and May 12, 1999, to review preliminary alternative design for the DEIS. Additionally, several project updates were mailed to participants in March and April.

Workshops and public meetings with interested groups continued throughout the FEIS development process. Following the release of the DEIS, copies of the document were mailed to 650 people. Public information meetings on the DEIS were hosted by the Lassen, Plumas, and Tahoe National Forests at Loyalton, Blairsden, Quincy, Susanville, Greenville, Chico, Burney, Chester, Nevada City, and Sacramento, California between June 23 and July 12, 1999. Two public roundtables were also held in Vallejo and Quincy, California on July 7 and 8, 1999.

Consultations between the Interdisciplinary Team and groups such as the Quincy Library Group, the Sierra Nevada Forest Protection Campaign, and the Plumas Forest Project were held throughout the period leading up to the issuance of an FEIS. Information and guidance meetings were also held during this period with a Steering Committee consisting of representatives from the Pacific Southwest Research Station, the Pacific Southwest Regional Office, and the Forest Supervisors of the Lassen, Plumas, and Tahoe National Forests. Information sharing meetings were also held with the Sierra Nevada Forest Plan Amendment (Sierra Nevada Framework Project) interdisciplinary team.

Alternatives Considered

The alternatives were developed in response to the significant issues, direction in the Act, and from comments received during the scoping process. All alternatives to the proposed action received detailed analysis in the FEIS.[2] There were no alternatives dismissed from detailed analysis.

Alternatives Considered in Detail

Alternative 1

Alternative 1 is the no action alternative required by the National Environmental Policy Act. Management in the planning area would continue under existing decisions and management direction in the Records of Decision for the Land and Resource Management Plans for the Lassen, Plumas, and Tahoe National Forests, as previously amended (Forest Plans). Resource management activities, such as fuels and timber management, would continue as identified in current Forest Plans and annual budgets. Watershed and riparian resources would be protected using streamside management zones. Roadless area management would be constrained by the interim rule temporarily suspending road construction published in the *Federal Register*[3] on February 12, 1999. Alternative 1 would not further amend the Lassen, Plumas, and Tahoe Forest Plans.

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[2] Reference FEIS, page 1-3.

Alternative 2

Alternative 2, one of the two Forest Service preferred alternatives identified in the DEIS, establishes and conducts a pilot project not to exceed 5 years based on the resource management activities described in the Act and the *Quincy Library Group Community Stability Proposal of 1993*. Alternative 2 provides fuel reduction through the construction of a strategic system of defensible fuel profile zones, group selection harvest, individual tree selection harvest, and increases protection of riparian/aquatic ecosystems through a riparian management program, including adopting Scientific Analysis Team guidelines for riparian and watershed protection and restoration. As required in the Act, Alternative 2 provides resource management exclusions in areas labeled offbase and deferred, protected activity centers, California spotted owl habitat areas, and highly ranked late successional old growth forests (ranks 4 and 5). Roadless area management would be constrained by the interim rule temporarily suspending road construction published in the *Federal Register* on February 12, 1999. Selection of this alternative amends the Land and Resource Management Plans for the Lassen, Plumas, and Tahoe National Forests (Forest Plans).

Alternative 3

Alternative 3 establishes and conducts a pilot project not to exceed 5 years based on the resource management activities described in the Act and the *Quincy Library Group Community Stability Proposal of 1993*. Alternative 3 provides fuel reduction through construction of a strategic system of defensible fuel profile zones in combination with area fuel treatment, group selection and individual tree selection harvest. Alternative 3 increases protection of riparian/aquatic ecosystems through a riparian management program, including adopting Scientific Analysis Team guidelines for riparian and watershed protection and restoration. As required in the Act, Alternative 3 provides resource management exclusions in areas labeled offbase and deferred, protected activity centers, California spotted owl habitat areas, and highly ranked late successional old growth forests (ranks 4 and 5). Alternative 3 also includes a management strategy designed to protect the abundance and distribution of suitable spotted owl habitat. Any management activities planned for spotted owl nesting habitat would not degrade that habitat out of nesting status. Any management activities planned for foraging habitat would not degrade it out of foraging habitat status. Roadless area management would be constrained by the interim rule temporarily suspending road construction published in the *Federal Register* on February 12, 1999. Selection of Alternative 3 amends the Land and Resource Management Plans for the Lassen, Plumas, and Tahoe National Forests (Forest Plans).

Alternative 4

Alternative 4, one of the two Forest Service preferred alternatives identified in the DEIS, describes a program of resource management activities comparable to current levels of management. Alternative 4 establishes a pilot project not to exceed 5 years to implement and demonstrate the effectiveness of the resource management activities described in the Act, with emphasis on the protection of old forest areas identified as areas of late successional emphasis. Alternative 4 provides fuel reduction through construction of a strategic system of defensible fuel profile zones in combination with area fuel treatments, group selection and individual tree selection harvest. Alternative 4 increases protection of riparian/aquatic ecosystems through a riparian management program, including adopting Scientific Analysis Team guidelines for riparian and watershed protection and restoration. As required in the Act, Alternative 4 provides resource management exclusions in areas labeled offbase and deferred, protected activity centers, California spotted owl habitat areas, highly ranked late successional old growth forests (ranks 4 and 5), and areas of late successional emphasis. Alternative 4 includes a management strategy designed to protect the abundance and distribution of suitable spotted owl habitat. Any management activities planned for spotted owl nesting habitat would not degrade that habitat out of nesting status. Any management activities planned for foraging habitat would not degrade it out of foraging habitat status. Roadless area management would be constrained by the interim rule temporarily suspending road construction published in the *Federal Register* on February 12, 1999. Selection of Alternative 4 amends the Land and Resource Management Plans for the Lassen, Plumas, and Tahoe National Forests).

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[3] Part III, USDA Forest Service, 36 CFR Part 212, Administration of the Forest Development Transportation System: Temporary Suspension of Road Construction and Reconstruction in Unroaded Areas; Interim Rule, Federal Register, Volume 64, Number 29, pages 7304 through 7305, February 12, 1999.

Alternative 5

Alternative 5 establishes a pilot project not to exceed 5 years designed to retain high-quality late successional old growth reserves, mimic natural disturbance events, and restore the natural functions and processes that could protect and enhance ecological values described in the *Sierra Nevada Ecosystem Project* Report.[4] This alternative emphasizes the conservation of late successional emphasis areas and old forests and relies on Sierra Nevada Ecosystem Project guidelines for watershed and riparian resources protection. Alternative 5 maintains at least 50 percent of each home range in habitat suitable for California spotted owl foraging and nesting. Fire would be restored as a natural disturbance process. A fuel management strategy would be implemented using strategically located fuel treatments that emphasize prescribed fire, biomass removal, and understory thinning. Roadless area management would be constrained by the interim rule temporarily suspending road construction published in the *Federal Register* on February 12, 1999, but additional protection would be extended to unroaded areas greater than or equal to 5,000 acres, areas greater than or equal to 1,000 acres adjacent to Wilderness and Wild and Scenic Rivers, and other roadless areas between 1,000 and 5,000 acres in size until completion of an evaluation. Selection of Alternative 5 amends the Land and Resource Management Plans for the Lassen, Plumas, and Tahoe National Forests.

Environmentally Preferred Alternative

Of the five alternatives evaluated in the FEIS, Alternative 3 is the environmentally preferable alternative. Alternative 3 would significantly reduce the threat of catastrophic fire by implementing a strategic system of fuelbreaks in the form of defensible fuel profile zones and area fuel treatments. Only Alternative 2 approaches the fuel reduction efficacy of Alternative 3. Alternative 3 also provides significant protection for sensitive species and their habitat, riparian areas, and old forest communities. Alternatives 4 and 5 provide equal or greater protection for such resources, but fail to significantly reduce the threat of catastrophic fire. Because

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[4] Centers for Water and Wildland Resources, University of California at Davis. 1996. Wildland Resources Center Report Number 37, *Sierra Nevada Ecosystem Project, Final Report to Congress: Status of the Sierra Nevada*, Volumes I, II, III, and Addendum. July 1996.

Alternative 3 reduces the danger of catastrophic fire, while protecting environmentally sensitive resources, it is the environmentally preferable alternative.

Decision

We have selected Alternative 2, as presented in the FEIS,[5] as the means of implementing the pilot project. In order to reduce the risk to the California spotted owl, the following mitigation measure will be applied to all resource management activities conducted under Alternative 2, until a new spotted owl habitat management strategy for the Sierra Nevada is released:

Mitigation: At the site-specific project level, defensible fuel profile zones, group selection harvest areas, and individual tree selection harvest areas will be designed and implemented to completely avoid suitable California spotted owl habitat, including nesting habitat and foraging habitat.

By selecting Alternative 2, the Land and Resource Management Plans for the Lassen, Plumas and Tahoe National Forests are amended as described in the section titled "Changes in Management Direction." The environmental analysis and disclosure of environmental impacts of the amendments are included in the environmental analysis and disclosure of environmental impacts for Alternative 2 in the FEIS. The amendments apply only to site-specific projects derived from this FEIS analysis that are implemented in the pilot project area. The amendments do not apply to the planning area as a whole, nor to National Forest System lands outside the planning area. These amendments will terminate upon conclusion of the pilot project.

The Forest Service uses two levels of decision making when implementing resource management activities: programmatic (strategic) and project-level (site-specific). This decision provides programmatic direction for the duration of the pilot project. All project-level decisions will be implemented after site-specific environmental analysis and review.

All practicable means of avoiding and minimizing environmental harm were adopted in selecting Alternative 2. Alternative 2 was crafted based on the clear direction in the Act, and the mitigation measure we have added to avoid impacting California spotted owl habitat provides a means of reducing the environmental harm that Alternative 2 could cause. It would be impracticable to implement Alternative 3, the environmentally preferable alternative, because Alternative 3 fails to implement the resource management direction provided by Congress.

In making this decision, and with the funds made available, we shall use the most cost-effective means available, as determined by the Secretary, to implement resource management activities described in Alternative 2. During implementation of the resource management activities in the pilot project area, we intend to implement all requirements, amendments, mitigation, and monitoring identified for Alternative 2 in the FEIS, the Act, and the supplemental mitigation.

California Spotted Owl Habitat Management

As required by the Act, all resource management activities proposed under Alternative 2 will comply with the minimum standards set by the California spotted owl interim direction.[6] The interim direction guidelines provide protection measures for the maintenance of the old forest characteristics upon which spotted owls depend. However, the guidelines permit the manipulation, and partial degradation, of suitable owl habitat. Specifically, the interim direction guidelines permit timber harvesting that reduces the quality of suitable nesting and foraging habitat. To minimize the threat to the viability of the California spotted owl in the planning area, it is necessary to add the mitigation described above to maintain suitable owl habitat in the pilot project area.

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[5] Reference FEIS, pages 2-6 through 2-14, and 2-19 through 2-23.

[6] Interim direction is set forth in the California Spotted Owl Sierran Province Interim Guidelines Environmental Assessment (Appendix Q).

Since the implementation of the interim direction guidelines, several demographic studies have been conducted that show declining California spotted owl populations in the Sierra Nevada, and biologists have concluded that maintaining suitable habitat may be necessary to prevent further population declines.[7] While the recent population declines in the Sierra Nevada may not be the result of habitat modification, land management actions that degrade suitable habitat can accelerate population declines. A reduction in the quality or quantity of suitable California spotted owl habitat, in combination with declining populations and unforeseeable environmental conditions (severe weather, fire, insect and disease outbreaks), may have significant adverse effects on California spotted owl viability in the planning area.

Alternative 2, as described in the DEIS and FEIS, would reduce the amount of owl nesting habitat by 7 percent over the term of the pilot project, and reduce the amount of foraging habitat by 8.5 percent, despite the protection provided by the interim direction guidelines. Such reductions in suitable habitat would decrease the number of California spotted owl home ranges with more than 50 percent suitable habitat by 11 percent over the term of the pilot project.[8] In light of the recent demographic studies[9] showing declining California spotted owl populations, such impacts to California spotted owl habitat could pose a serious risk to the viability of the California spotted owl in the planning area, thereby making the implementation of Alternative 2 inconsistent with the National Forest Management Act and its implementing regulations.[10] Providing additional protection for suitable California spotted owl habitat will greatly reduce the threat to California spotted owl viability in the planning area from Alternative 2, while still permitting the implementation of the resource management direction provided in the Act.

If a new California spotted owl habitat management strategy for the Sierra Nevada is not released in the near future, or if one is released that implements an approach similar to the mitigation described above, implementation of the selected alternative may result in fewer acres being treated than specified in the Act. Such a potential shortfall was acknowledged by Congress (Senate Report 105-138, 105th Congress, page 9).

Impact of Mitigation

By applying the supplemental mitigation, no resource management activities, except riparian restoration, will be permitted in suitable California spotted owl habitat unless and until a new California spotted owl strategy for the Sierra Nevada is released that allows such activity. Consequently, the threat to California spotted owl long-term viability in the planning area caused by the pilot project's resource management activities will be significantly reduced, if not eliminated. Without the additional mitigation, Alternative 2 would reduce suitable nesting habitat by 7 percent, and suitable foraging habitat by 8.5 percent. With the additional mitigation, there would be neither loss nor degradation of any nesting or foraging habitat.[11]

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[7] For further detail reference the *Biological Evaluation* (August 4, 1999) for the FEIS located in the planning file.

[8] Alternative 2 also rated the lowest among the alternatives in minimizing habitat fragmentation and impacting spotted owl Areas of Concern.

[9] Steger, G.N., T.E. Munton, G.P. Elberlein, and K.D. Johnson. 1998. Annual Progress Report 1998. *A Study of Spotted Owl Demographics in the Sierra National Forest and Kings Canyon National Parks.* Pacific Southwest Research Station, Fresno, California. November 1998.

[10] The National Forest Management Act and its implementing regulations require that the national forests be managed so as to "provide for diversity of plant and animal communities . . . ," 16 U.S.C §1604(g)(3)(B), and "to maintain viable populations of existing native and desired non-native vertebrate species in the planning area." 36 C.F.R. §219.19.

The supplemental mitigation should not interfere with implementing the resource management direction provided by Congress, especially given that a new California spotted owl habitat management strategy for the Sierra Nevada will likely be issued in the near future. Of the approximately 213,000 acres of defensible fuel profile zones to be constructed over the term of the pilot project, only 61,939 acres of suitable California spotted owl habitat are expected to be entered. Consequently, 71 percent of the projected defensible fuel profile zone acreage can be constructed without entering suitable California spotted owl habitat, before the new California spotted owl strategy is likely implemented. Of the 43,500 acres of group selection harvest, approximately half of the acreage will be located in eastside pine. Eastside pine is not suitable habitat for the owl. Consequently, during the beginning year(s) of the pilot project, the Forest Service should be able to fully implement the resource management direction provided in Alternative 2 and the Act, without impacting any suitable California spotted owl habitat.

This California spotted owl habitat protection strategy is not projected to last for the duration of the pilot project. When a new California spotted owl habitat management strategy is implemented, it will take the place of the approach described above, and apply to the Plumas, Lassen, and Tahoe National Forests for the remainder of the pilot project period.

Changes in Management Direction

Wildlife

Alternative 2 changes wildlife management direction in the Land and Resource Management Plans for the Lassen, Plumas, and Tahoe National Forests in the following ways:

- ➢ The Lassen, Plumas, and Tahoe Forest Plans are amended to require early consultation with the USDI Fish and Wildlife Service regarding Federally listed animal species.[12]
- ➢ The Lassen, Plumas, and Tahoe Forest Plans are amended to require completion of bald eagle management plans in consultation with the USDI Fish and Wildlife Service.[13]
- ➢ The Lassen, Plumas, and Tahoe Land and Resource Management Plans are amended to establish or revise limited operating periods for certain wildlife species.[14]

Forest Service policy regarding the management of threatened, endangered, and sensitive species, and other species for which viability is a concern would continue to be implemented, including:

1. Surveying areas of suitable habitat, using protocols based on the best available science, to determine information relevant to implementation of site-specific resource management activities.
2. Limited operating periods would be applied to unsurveyed habitat considered to be suitable for threatened, endangered, or sensitive species; and

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[11] Providing additional protection to suitable owl habitat within the westside and transition zones will also provide habitat benefits for three other sensitive species that depend on late seral, closed-canopied forests: goshawks, American marten, and Pacific fisher.

[12] Reference FEIS, page 2-6 and Table 2.1.

[13] Reference FEIS, page 2-6 and Table 2.2 and 2.3.

[14] Reference FEIS, page 2.8

to habitat considered suitable for any species for which viability may be a concern.

3. Habitat connectivity, including hydrologic connectivity, would be maintained to allow movement of old forest or aquatic/riparian-dependent species between areas of suitable habitat.

4. Over the course of the pilot project, suitable habitat for old forest-dependent species and aquatic/riparian-dependent species (including amphibians) shall not be reduced by more than 10 percent below 1999 levels.

Should landscape management strategies for any plant or wildlife species for which viability may be a concern be developed based on viability determinations through the efforts of the Sierra Nevada Framework for Conservation and Collaboration, the Land and Resource Management Plans for the Lassen, Plumas, and Tahoe National Forests (Forest Plans) will be amended, as appropriate to include them as direction. In the event that the above-mentioned viability determinations are not issued within 18 months, the viability determinations presented in the document, *Biological Assessment and Evaluation of the Herger-Feinstein Quincy Library Group Forest Recovery Act (August 14, 1999)*, will be revisited.

The FEIS is a programmatic analysis. No site-specific decisions are made in this decision. When site-specific project-level analysis occurs the Forest Service will coordinate with biologists from other agencies (such as the USDI Fish and Wildlife Service and California Department of Fish and Game) during project specific environmental planning to facilitate addressing conservation of sensitive species and species of concern.

Vegetation

Alternative 2 changes the vegetation management direction in the Land and Resource Management Plans for the Lassen, Plumas, and Tahoe National Forests in the following ways:

- The Lassen, Plumas, and Tahoe Forest Plans are amended to add standards and guidelines to address management of noxious and invasive exotic weeds.[15]

- The Lassen, Plumas, and Tahoe Forest Plans are amended to specify direction for oak management[16]

Riparian

Alternative 2 changes the riparian management direction in the Land and Resource Management Plans for the Lassen, Plumas, and Tahoe National Forests according to the Scientific Analysis Team guidelines[17] in the following ways:

- The Lassen, Plumas, and Tahoe Forest Plans are amended to apply the minimum protection riparian buffer widths prescribed by the Scientific Analysis Team guidelines.[18]

- The Lassen, Plumas, and Tahoe Forest Plans are amended to prohibit scheduled timber harvest in riparian habitat conservation areas, except for salvage harvest, as described below, or to meet Scientific Analysis Team guidelines for resource management objectives.[19]

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[15] Reference FEIS, page 2-9 and Table 2.4

[16] Reference FEIS, page 2.9 and Table 2.5

[17] USDA Forest Service, 1993, *Viability Assessments and Management Considerations for Species Associated with Late Successional and Old Growth Forests of the Pacific Northwest: The Report of the Scientific Analysis Team.* March 1993. Appendix 5-K, Component 2, pages 443 through 454.

[18] Reference FEIS, page 2.10 and Table 2.6.

- The Lassen, Plumas, and Tahoe Forest Plans are amended to allow unscheduled timber harvest salvage in Riparian Habitat Conservation Areas only when riparian management objectives are met or a prescription is needed to obtain riparian management objectives.[20]
- The Lassen, Plumas, and Tahoe Forest Plans are amended to include provisions for accommodating at least a 100-year flow, including associated bedload and debris, at new stream crossings and existing crossings where resources are degraded.[21]
- The Lassen, Plumas, and Tahoe Forest Plans are amended by adding a standard and guideline to provide for development and implementation of a road management plan for meeting resource management objectives.[22]
- The Lassen, Plumas, and Tahoe Forest Plan are amended to provide specific direction for management of fire and fuel treatment to meet resource management objectives and minimize disturbance of riparian ground cover and vegetation.[23]
- The Lassen, Plumas, and Tahoe Forest Plan are amended to provide direction for design of prescribed burn project identifying objectives and risks.[24]
- The Tahoe and Lassen Forest Plans re amended to require a watershed analysis before implementing riparian restoration projects.[25] The Lassen, Plumas, and Tahoe Forest Plan are amended to require habitat assessments and surveys for California red-legged frogs in elevations below 5,500 feet.[26]

National Forest Management Act Significance Determination

Selection of Alternative 2 amends the Land and Resource Management Plans for the Lassen, Plumas, and Tahoe National Forests (Forest Plans). The amendments as described above and in the FEIS were analyzed for National Forest Management Act significance according to the significance criteria in Forest Service Handbook 1909.12, Section 5.32(3)(a-d). Four criteria must be addressed to determine the significance of amendments to Land and Resource Management Plans. The criteria are: (1) timing, (2) location and size, (3) goals, outputs, and objectives, and (4) management prescriptions.

Timing – The first decade of the planning period for the Lassen Forest Plan ends on January 11, 2003; the first decade of the planning period for the Plumas Forest Plan ended on August 26, 1998; and the first decade of the planning period for the Tahoe Forest Plan ends on June 14, 2000. The amendments described above are expected to become effective by September 1999 (based on projected implementation dates for this Record of Decision). Because these amendments will be implemented late in the planning period or outside the planning period for the Lassen, Plumas, and Tahoe Forest Plans, the amendments are determined to be nonsignificant. Additionally, the pilot project will last for a maximum of 5 years, so the amendments are only temporary.

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[19] Reference FEIS, page 2.10 and Table 2.7.

[20] Reference FEIS, page 2.10 and Table 2.7.

[21] Reference FEIS, page 2.10 and Table 2.8.

[22] Reference FEIS, page 2.10 and Table 2.8.

[23] Reference FEIS, page 2-10 and Table 2.9.

[24] Reference FEIS, page 2-10 and Table 2.9.

[25] Reference FEIS, page 2-11 and Table 2.10.

[26] Reference FEIS, page 2-11 and Table 2.9.

Location and Size –The Act limits the total acreage affected by resource management activities to not more than 70,000 acres annually, or 350,000 for the maximum (5-year) term of the pilot project. Therefore, at most 11 percent of the total landbase administered by the Lassen, Plumas, and Tahoe National Forests will be affected. Because a small percentage of the total landbase is affected by the amendments, the amendments are determined to be nonsignificant.

Goals, Outputs, and Objectives – Implementation of the pilot project will not change long-term relationships between goals, objectives, and outputs disclosed in the Records of Decision, Forest Plans, and associated environmental documentation for the Lassen, Plumas, and Tahoe National Forests. Because the amendments only change short-term outputs, not long-term relationships, the opportunity to achieve outputs disclosed in the Forest Plans is not forgone. Therefore, the amendments are determined to be nonsignificant.

Management Prescription – The amendments do not change management prescriptions discussed in the Lassen, Plumas, and Tahoe Forest Plans. All of the resource management activities mandated by the Act are permitted under the current Lassen, Plumas, and Tahoe Forest Plans. Further, the amendments are temporary in nature, and limited in the applications to the pilot project activities – they do not affect actions in the Lassen, Plumas, and Tahoe National Forests unrelated to the pilot project. Therefore, the amendments are determined to be nonsignificant.

Reasons for Our Decision

Alternative 2 was selected because it will implement the direction provided by Congress in the Act. Alternative 2, therefore, best meets the purpose and need for action.[27] As described above, we believe that additional mitigation must be applied to Alternative 2 in order to provide sufficient protection to the California spotted owl.[28] We believe that without such mitigation, the resource management activities proposed in Alternative 2 would pose a significant risk to the long-term viability of the California spotted owl, and therefore be inconsistent with the National Forest Management Act implementing regulations at 36 CFR 219.19. Alternatives 1, 3, 4, and 5 were not selected because they fail to implement the resource management direction provided by Congress, and therefore fail to fully achieve the purpose and need of the pilot project.

Alternative 1, the no action alternative, was not selected because it fails to implement the resource management direction provided by Congress, and would not promote the goals of the pilot project. The Act directs the Forest Service to implement a strategic system of defensible fuel profile zones, use the uneven-age silvicultural systems known as group selection harvest and individual tree harvest, and institute a program of riparian management. Alternative 1 proposes neither a strategic system of defensible fuel profile zones, nor significant group selection treatments, nor the riparian management program described in the Act. The Act states that resource management activities shall not be conducted on lands classified as offbase or deferred; Alternative 1 permits resource activities on such lands. The Act states that the Scientific Analysis Team guidelines shall apply to all resource management activities; Alternative 1 does not adopt the Scientific Analysis Team guidelines. Because it would not implement the resource management direction provided in the Act, Alternative 1 would not advance the ecological and economic goals promoted in the Act and the *Quincy Library Group Community Stability Proposal*. Consequently, Alternative 1 was not selected.

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[27] Reference FEIS, page 1-3.

[28] Beyond the input from Forest Service biologists, the Forest Service received extensive comments from the public and Federal agencies, such as the USDI Fish and Wildlife Service, recommending that additional protection be given to California spotted owl habitat.

Alternative 3 was not selected because it fails to implement the resource management direction provided by Congress. Alternative 3 closely matches Alternative 2 and the resource direction provided in the Act, but adopts a slightly different fuel management strategy. The Act directs the Forest Service to construct 40,000 to 60,000 acres of defensible fuel profile zones each year.[29] Alternative 3 proposes constructing only 14,000 to 20,000 acres of defensible fuel profile zones each year. The remaining annual fuel treatments (26,000 to 40,000 acres) would be area fuel treatments, which are not proposed in the Act.[30] Due to this difference, Alternative 3 was not selected.

Alternative 4 was not selected because it fails to implement the resource management direction provided by Congress and would not promote the goals of the pilot project. The Act directs the Forest Service to construct 40,000 to 60,000 acres of defensible fuel profile zones.[31] Alternative 4 only proposes 12,000 acres of defensible fuel profile zones, and 13,000 acres of area fuel treatments, for a total of 25,000 acres per year of area fuel treatments.[32] The proposed level of fuel treatments does not reduce the threat of catastrophic fire to the levels desired in Congressional direction and the *Quincy Library Group Community Stability Proposal*. Furthermore, such reduced treatment levels would likely detract from the economic health of the communities in and near the planning area, which would interfere with one of the goals of the Act. Because Alternative 4 fails to implement Congressional direction, it was not chosen.

Alternative 5 was not selected because it fails to implement the resource management direction provided by Congress and would not promote the goals of the pilot project. The Act directs the Forest Service to implement a strategic system of defensible fuel profile zones, and use the uneven-age silvicultural systems known as group selection and individual tree selection harvest. Specifically, the Act directs the Forest Service to construct 40,000 to 60,000 acres of defensible fuel profile zones each year, and approximately 8,700 acres of group selection treatments each year.[33] Alternative 5 proposes neither a strategic system of defensible fuel profile zones, nor significant amounts of group selection treatments. Alternative 5 proposes a fuel management program that emphasizes the use of prescribed fire and is developed based on landscape-level watershed analysis. The number of acres to be treated in a given year, would depend on results of the watershed analysis. Group selection harvest, although not emphasized, could be implemented to enhance desired vegetative characteristics. Such levels of vegetation treatments do not conform to the levels set in the Act and will not reduce the threat of catastrophic to the levels desired in Congressional direction and the *Quincy Library Group Community Stability Proposal*. Furthermore, such reduced treatment levels would likely detract from the economic health of the communities in and near the planning area, which would interfere with one of the goals of the Act. Because Alternative 5 fails to implement Congressional direction, it was not chosen.

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[29] Reference the Act, subsection (d)(1).

[30] Reference FEIS, page 2-3 and Table 2.25.

[31] Reference FEIS, page 2-3 and Table 2.25.

[32] Reference FEIS, page 2-7 and Table 2.25.

[33] Reference the Act, subsection (d)(1).

Monitoring Requirements

The monitoring strategy[34] was developed to meet several objectives. First, to accomplish the reporting and monitoring requirements as set forth in the Act. Second, to gather information to aid the work of the Scientific Review Team (required by the Act) that will be appointed by the Secretary of Agriculture. The Scientific Review Team will assess the success of implemented actions in meeting the objectives outlined in the Act. Third, to assess the degree of implementation and effectiveness of the selected alternative in meeting objectives outlined in FEIS. Monitoring and evaluation are essential components of managing natural resources on public lands. The monitoring strategy will:

- Provide information useful to managers applying the principles of adaptive management.
- Assist the public in gauging the success of implementing the resource management activities as designed.
- Assess the effectiveness of the resource management activities in achieving resource objectives.

The pilot project described in Alternative 2 will be monitored according to the monitoring strategy described in Chapter 6 of the FEIS. The monitoring strategy is comprised of three parts.

Part I (Annual Status Reports) lists project activity reporting requirements set forth in the Act. The purpose of the annual status reports is to track expenditures, outputs, and projections related to activities authorized by the Record of Decision and specifically required by the Act. Part II (Implementation Monitoring) assesses the degree to which actions were implemented according to management direction contained in the FEIS; the Lassen, Plumas, and Tahoe Forest Plans; or in site-specific direction. Implementation monitoring determines the degree and extent to which application of management direction (standards and guidelines) and mitigation measures meet specified direction and intent. Implementation monitoring should evaluate performance in carrying out actions described in the Record of Decision. Tracking and reporting implementation of the resource management activities provides a record of accomplishment. Part III (Effectiveness Monitoring) assesses the degree to which implemented resource management activities meet resource objectives and changes in social or economic indicators from communities within the planning area. The purpose of effectiveness monitoring is to determine the degree to which implemented resource management activities met objectives.

The monitoring strategy also addresses other monitoring and evaluation needs identified during the analysis for the FEIS. Eight additional items will be monitored, evaluated, and reported:

- A description of economic benefits to local communities that could be achieved by implementation of the pilot project.
- A description of adverse environmental impacts of the pilot project. Questions stemming from the FEIS issues are intended to address this monitoring requirement.
- An assessment of ecological health and adverse environmental impacts.
- An assessment of community stability.
- The collection of watershed monitoring data with priority on timing of water releases, water quality changes, and water yield changes over the short-term and long-term in the pilot project area.

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[34] Reference FEIS, Chapter 6.

- Noxious weeds
- Sensitive Plants
- Threatened, endangered and sensitive wildlife species

Permits, Licenses, and Grants Required for Implementation. The following permits will be needed or used for projects implementing this decision:

- County road use permits, as appropriate
- Air Quality Management District Burn permits
- US Army Corps of Engineers - Wetland and Riparian Restoration permits (Section 404 of the Clean Water Act)
- State Water Quality Control Board permits
- County Agricultural permits

Findings Required by Other Laws

The Forest Service is complying with Section 106 of the National Historic Preservation Act, as stipulated in the agreement entitled *Programmatic Agreement between the USDA Forest Service - Pacific Southwest Region, California State Historic Preservation Officer, and the Advisory Council on Historic Preservation.*[35] Consultation with the State Historic Preservation Office is not required at this time. If and when effects on cultural heritage resources are identified, consultation will be required outside the programmatic agreement.

Section 7 of the Endangered Species Act requires Federal agencies to pursue consultation with the USDI Fish and Wildlife Service and the U.S. Department of Commerce, National Marine Fisheries Service, whichever is appropriate, during the planning phase for site-specific projects. To date, informal consultation has occurred with both agencies regarding Federally proposed, threatened, or endangered species that are expected to occur within the planning area for this proposal. In a letter dated August 17, 1999, the USDI Fish and Wildlife Service concurred with the Forest Service's conclusion that implementation of Alternative 2, as modified by supplemental mitigation, would not adversely affect any species listed under the Endangered Species Act.[36] Consequently, no further consultation is necessary.

All Federal agencies must comply with the provisions of the Clean Water Act. This proposal meets the terms of the Clean Water Act for non-point sources of pollution, primarily erosion and sedimentation. For purposes of the selected alternative (Alternative 2) and the analysis in the FEIS, compliance is accomplished through implementation of *Best Management Practices for National Forests in California* (USDA Forest Service, 1979).

This pilot project conforms with the Clean Air Act and complies with the General Conformity Rule recently promulgated by the Environmental Protection Agency[37]. Activities will be coordinated with permitting requirements of the California Air Resources Board and the Air Quality Management Districts will be met.

Administrative Review

Because this is a programmatic decision and will not implement any site-specific projects, this decision is subject to administrative review pursuant to 36 CFR 217. Any appeal of this decision must be fully consistent with 36 CFR 217.9, and be filed in duplicate with:

---

[35] Reference FEIS, page 1-8.

[36] In the same letter, the USDI Fish and Wildlife Service stated that it was in agreement with the Forest Service's approach to maintaining the viability of old forest-associated species of concern (California spotted owl, northern goshawk, great gray owl, Pacific fisher, and American marten), as well as aquatic and riparian-dependent species (mountain yellow-legged frog, foothill yellow-legged frog, Cascade frog, and northern leopard frog).

[37] Reference FEIS, Appendix X.

Regional Forester
USDA Forest Service – RS
1323 Club Drive
Vallejo, CA 94592

within 45 days of the date of the published legal notice. Any notice of appeal must include at a minimum:

1. A statement that the document is a Notice of Appeal filed pursuant to 36 CFR 217;
2. The name, address, and telephone number of the appellant;
3. Identification of the decision about which the objection is being made;
4. Identification of the document in which the decision is contained, by title and subject, date of the decision, and name and title of the Deciding Officer;
5. Identification of the specific portion of the decisions to which the objection is made;
6. Reasons for objection, including issues of fact, law, regulation, or policy, and if applicable, specifically how the decision violates law, regulation, or policy; and
7. Identification of the specific change(s) in the decision that the appellant seeks.

To request a stay of implementation, an appellant must:

1. File a written request with the Reviewing Officer;
2. Simultaneously send a copy of the stay request to any other appellant(s), intervenor(s), and to the Deciding Officer; and
3. Provide a written justification of the need for a stay, which at a minimum includes the following:
   (a) A description of the specific project(s), activity(ies), or action(s) to be stopped.
   (b) Specific reasons why the stay should be granted in sufficient detail to permit the Reviewing Officer to evaluate and rule upon the stay request, including at a minimum:
      - The specific adverse effect(s) upon the requester;
      - Harmful site-specific impacts or effects on resources in the area affected by the activity(ies) to be stopped; and
      - How the cited effects and impacts would prevent a meaningful decision on the merits.

Implementation

Pursuant 36 CFR 217.10(a), this decision will be implemented 7 calendar days following publication of the legal notice of the decision unless a stay request is granted.

Contact Person

David Peters
Project Manager
Herger-Feinstein Quincy Library Group Forest Recovery Act
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Signatures and Date

Kathryn J. Silverman, Acting Forest Supervisor, Lassen National Forest

Date 8/20/1999

Mark J. Madrid, Forest Supervisor, Plumas National Forest

Date 8/20/1999

Steven T. Eubanks, Forest Supervisor, Tahoe National Forest

Date 8/20/1999

TITLE IV

THE HERGER-FEINSTEIN QUINCY LIBRARY GROUP FOREST RECOVERY ACT

Herger-Feinstein Quincy Library Group Forest Recovery Act. 16 USC 2104 note.

SEC. 401. PILOT PROJECT FOR PLUMAS, LASSEN, AND TAHOE NATIONAL FORESTS TO IMPLEMENT QUINCY LIBRARY GROUP PROPOSAL. (a) DEFINITION.—For purposes of this section, the term "Quincy Library Group-Community Stability Proposal" means the agreement by a coalition of representatives of fisheries, timber, environmental, county government, citizen groups, and local communities that formed in northern California to develop a resource management program that promotes ecologic and economic health for certain Federal lands and communities in the Sierra Nevada area. Such proposal includes the map entitled "QUINCY LIBRARY GROUP Community Stability Proposal", dated October 12, 1993, and prepared by VESTRA Resources of Redding, California.

(b) PILOT PROJECT REQUIRED.—

(1) PILOT PROJECT AND PURPOSE.—The Secretary of Agriculture (in this section referred to as the "Secretary"), acting through the Forest Service and after completion of an environmental impact statement (a record of decision for which shall be adopted within 300 days), shall conduct a pilot project on the Federal lands described in paragraph (2) to implement and demonstrate the effectiveness of the resource management activities described in subsection (d) and the other requirements of this section, as recommended in the Quincy Library Group-Community Stability Proposal.

(2) PILOT PROJECT AREA.—The Secretary shall conduct the pilot project on the Federal lands within Plumas National Forest, Lassen National Forest, and the Sierraville Ranger District of Tahoe National Forest in the State of California designated as "Available for Group Selection" on the map entitled "QUINCY LIBRARY GROUP Community Stability Proposal", dated October 12, 1993 (in this section referred to as the "pilot project area"). Such map shall be on file and available for inspection in the appropriate offices of the Forest Service.

(c) Exclusion of Certain Lands, Riparian Protection and Compliance.—

(1) Exclusion.—All spotted owl habitat areas and protected activity centers located within the pilot project area designated under subsection (b)(2) will be deferred from resource management activities required under subsection (d) and timber harvesting during the term of the pilot project.

(2) Riparian protection.—

(A) In general.—The Scientific Analysis Team guidelines for riparian system protection described in subparagraph (B) shall apply to all resource management activities conducted under subsection (d) and all timber harvesting activities that occur in the pilot project area during the term of the pilot project.

(B) Guidelines described.—The guidelines referred to in subparagraph (A) are those in the document entitled "Viability Assessments and Management Considerations for Species Associated with Late-Successional and Old-Growth Forests of the Pacific Northwest", a Forest Service research document dated March 1993 and co-authored by the Scientific Analysis Team, including Dr. Jack Ward Thomas.

(C) Limitation.—Nothing in this section shall be construed to require the application of the Scientific Analysis Team guidelines to any livestock grazing in the pilot project area during the term of the pilot project, unless the livestock grazing is being conducted in the specific location at which the Scientific Analysis Team guidelines are being applied to an activity under subsection (d).

(3) Compliance.—All resource management activities required by subsection (d) shall be implemented to the extent consistent with applicable Federal law and the standards and guidelines for the conservation of the California spotted owl as set forth in the California Spotted Owl Sierran Provence Interim Guidelines or the subsequently issued guidelines, whichever are in effect.

(4) Roadless area protection.—The Regional Forester for Region 5 shall direct that any resource management activity required by subsection (d)(1) and (2), all road building, all timber harvesting activities, and any riparian management under subsection (d)(4) that utilizes road construction or timber harvesting shall not be conducted on Federal lands within the Plumas National Forest, Lassen National Forest, and the Sierraville Ranger District of the Tahoe National Forest that are designated as either "Off Base" or "Deferred" on the map referred to in subsection (a). Such direction shall be effective during the term of the pilot project.

(d) Resource Management Activities.—During the term of the pilot project, the Secretary shall implement and carry out the following resource management activities on an acreage basis on the Federal lands included within the pilot project area designated under subsection (b)(2):

(1) Fuelbreak construction.—Construction of a strategic system of defensible fuel profile zones, including shaded fuelbreaks, utilizing thinning, individual tree selection, and other methods of vegetation management consistent with the Quincy Library Group-Community Stability Proposal, on not less than 40,000, but not more than 60,000, acres per year.

(2) GROUP SELECTION AND INDIVIDUAL TREE SELECTION.—Utilization of group selection and individual tree selection uneven-aged forest management prescriptions described in the Quincy Library Group-Community Stability Proposal to achieve a desired future condition of all-age, multistory, fire resilient forests as follows:

(A) GROUP SELECTION.—Group selection on an average acreage of .57 percent of the pilot project area land each year of the pilot project.

(B) INDIVIDUAL TREE SELECTION.—Individual tree selection may also be utilized within the pilot project area.

(3) TOTAL ACREAGE.—The total acreage on which resource management activities are implemented under this subsection shall not exceed 70,000 acres each year.

(4) RIPARIAN MANAGEMENT.—A program of riparian management, including wide protection zones and riparian restoration projects, consistent with riparian protection guidelines in subsection (c)(2)(B).

(e) COST-EFFECTIVENESS.—In conducting the pilot project, Secretary shall use the most cost-effective means available, as determined by the Secretary, to implement resource management activities described in subsection (d).

(f) FUNDING.—

(1) SOURCE OF FUNDS.—In conducting the pilot project, the Secretary shall use, subject to the relevant reprogramming guidelines of the House and Senate Committees on Appropriations—

(A) those funds specifically provided to the Forest Service by the Secretary to implement resource management activities according to the Quincy Library Group-Community Stability Proposal; and

(B) year-end excess funds that are allocated for the administration and management of Plumas National Forest, Lassen National Forest, and the Sierraville Ranger District of Tahoe National Forest.

(2) PROHIBITION ON USE OF CERTAIN FUNDS.—The Secretary may not conduct the pilot project using funds appropriated for any other unit of the National Forest System.

(3) FLEXIBILITY.—Subject to normal reprogramming guidelines, during the term of the pilot project, the forest supervisors of Plumas National Forest, Lassen National Forest, and Tahoe National Forest may allocate and use all accounts that contain year-end excess funds and all available excess funds for the administration and management of Plumas National Forest, Lassen National Forest, and the Sierraville Ranger District of Tahoe National Forest to perform the resource management activities described in subsection (d).

(4) RESTRICTION.—The Secretary or the forest supervisors, as the case may be, shall not utilize authority provided under paragraphs (1)(B) and (3) if, in their judgment, doing so will limit other nontimber related multiple use activities for which such funds were available.

(5) OVERHEAD.—The Secretary shall seek to ensure that of amounts available to carry out this section—

(A) not more than 12 percent is used or allocated for general administration or other overhead; and

(B) at least 88 percent is used to implement and carry out activities required by this section.

(6) AUTHORIZED SUPPLEMENTAL FUNDS.—There are authorized to be appropriated to implement and carry out the pilot project such sums as are necessary.

(7) BASELINE FUNDS.—Amounts available for resource management activities authorized under subsection (d) shall at a minimum include existing baseline funding levels.

(g) TERM OF PILOT PROJECT.—The Secretary shall conduct the pilot project until the earlier of: (1) the date on which the Secretary completes amendment or revision of the land and resource management plans directed under and in compliance with subsection (i) for the Plumas National Forest, Lassen National Forest, and Tahoe National Forest; or (2) five years after the date of the commencement of the pilot project.

(h) CONSULTATION.—(1) The statement required by subsection (b)(1) shall be prepared in consultation with interested members of the public, including the Quincy Library Group.

(2) CONTRACTING.—The Forest Service, subject to the availability of appropriations, may carry out any (or all) of the requirements of this section using private contracts.

(i) CORRESPONDING FOREST PLAN AMENDMENTS.—Within 2 years after the date of the enactment of this Act, the Regional Forester for Region 5 shall initiate the process to amend or revise the land and resource management plans for Plumas National Forest, Lassen National Forest, and Tahoe National Forest. The process shall include preparation of at least one alternative that—

(1) incorporates the pilot project and area designations made by subsection (b), the resource management activities described in subsection (d), and other aspects of the Quincy Library Group-Community Stability Proposal; and

(2) makes other changes warranted by the analyses conducted in compliance with section 102(2) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)), section 6 of the Forest and Rangeland Renewable Resources Planning Act of 1974 (16 U.S.C. 1604), and other applicable laws.

(j) STATUS REPORTS.—

(1) IN GENERAL.—Not later than February 28 of each year during the term of the pilot project, the Secretary shall submit to Congress a report on the status of the pilot project. The report shall include at least the following:

(A) A complete accounting of the use of funds made available under subsection (f)(1)(A) until such funds are fully expended.

(B) A complete accounting of the use of funds and accounts made available under subsection (f)(1) for the previous fiscal year, including a schedule of the amounts drawn from each account used to perform resource management activities described in subsection (d).

(C) A description of total acres treated for each of the resource management activities required under subsection (d), forest health improvements, fire risk reductions, water yield increases, and other natural resources-related benefits achieved by the implementation of the resource management activities described in subsection (d).

(D) A description of the economic benefits to local communities achieved by the implementation of the pilot project.

(E) A comparison of the revenues generated by, and costs incurred in, the implementation of the resource management activities described in subsection (d) on the Federal lands included in the pilot project area with the revenues and costs during each of the fiscal years 1992 through 1997 for timber management of such lands before their inclusion in the pilot project.

(F) A proposed schedule for the resource management activities to be undertaken in the pilot project area during the 1-year period beginning on the date of submittal of the report.

(G) A description of any adverse environmental impacts from the pilot project.

(2) LIMITATION ON EXPENDITURES.—The amount of Federal funds expended on each annual report under this subsection shall not exceed $125,000.

(k) FINAL REPORT.—

(1) IN GENERAL.—The Secretary shall establish an independent scientific panel to review and report on whether, and to what extent, implementation of the pilot project under this section achieved the goals stated in the Quincy Library Group-Community Stability Proposal, including improved ecological health and community stability. The membership of the panel shall reflect expertise in diverse disciplines in order to adequately address all of those goals.

(2) PREPARATION.—The panel shall initiate such review no sooner than 18 months after the first day of the term of the pilot project under subsection (g). The panel shall prepare the report in consultation with interested members of the public, including the Quincy Library Group. The report shall include, but not be limited to, the following:

(A) A description of any adverse environmental impacts resulting from implementation of the pilot project.

(B) An assessment of watershed monitoring data on lands treated pursuant to this section. Such assessment shall address the following issues on a priority basis: timing of water releases; water quality changes; and water yield changes over the short- and long-term in the pilot project area.

(3) SUBMISSION TO THE CONGRESS.—The panel shall submit the final report to the Congress as soon as practicable, but in no case later than 18 months after completion of the pilot project.

(4) LIMITATION ON EXPENDITURES.—The amount of Federal funds expended for the report under this subsection, other than for watershed monitoring, shall not exceed $350,000. The amount of Federal funds expended for watershed monitoring under this subsection shall not exceed $175,000 for each fiscal year in which the report is prepared.

(l) RELATIONSHIP TO OTHER LAWS.—Nothing in this section exempts the pilot project from any Federal environmental law.

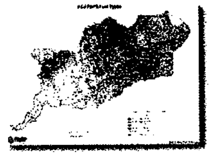
(m) LOANS FOR DEMONSTRATION PROJECTS FOR WOOD WASTE OR LOW-QUALITY WOOD BYPRODUCTS.—

(1) EVALUATION OF LOAN ADVISABILITY.—The Alternative Agricultural Research and Commercialization Corporation established under section 1658 of the Food, Agriculture, Conservation, and Trade Act of 1990 (7 U.S.C. 5902) (in this section referred to as the "Corporation") shall evaluate the advisability of making commercialization assistance loans under section 1661 of such Act (7 U.S.C. 5905) to support a minimum of 2 demonstration projects for the development and demonstration of commercial application of technology to convert wood waste or low-quality wood byproducts into usable, higher value products.

(2) LOCATION OF DEMONSTRATION PROJECTS.—If the Corporation determines to make loans under this subsection to support the development and demonstration of commercial application of technology to convert wood waste or low-quality wood byproducts into usable, higher value products, the Corporation shall consider making one loan with regard to a demonstration project to be conducted in the pilot project area and one loan with regard to a demonstration project to be conducted in southeast Alaska.

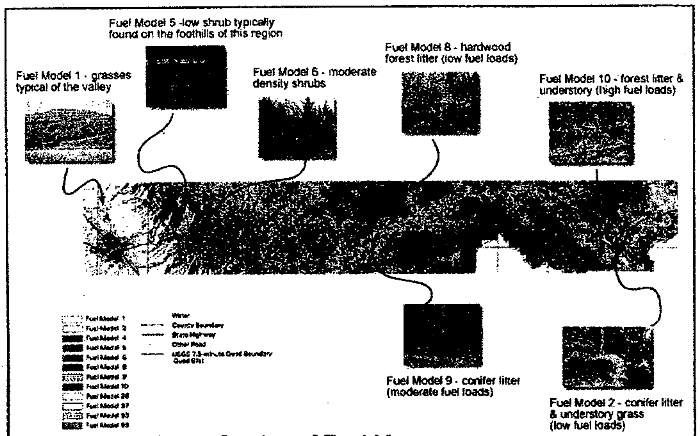
(3) ELIGIBILITY REQUIREMENTS.—To be eligible for a loan under this subsection, a demonstration project shall be required to satisfy the eligibility requirements imposed by the Corporation under section 1661 of the Food, Agriculture, Conservation, and Trade Act of 1990 (7 U.S.C. 5905).

SEC. 402. SHORT TITLE. Section 401 of this title may be cited as the "Herger-Feinstein Quincy Library Group Forest Recovery Act".



Surface Fuels Maps & Data

Notice: 130K - fuel map image may load slow


Fuel Model 5 -low shrub typically found on the foothills of this region
Fuel Model 8 - hardwood forest litter (low fuel loads)
Fuel Model 1 - grasses typical of the valley
Fuel Model 6 - moderate density shrubs
Fuel Model 10 - forest litter & understory (high fuel loads)
Fuel Model 9 - conifer litter (moderate fuel loads)
Fuel Model 2 - conifer litter & understory grass (low fuel loads)
Fuel Model 1
Fuel Model 2
Fuel Model 4
Fuel Model 5
Fuel Model 6
Fuel Model 8
Fuel Model 9
Fuel Model 10
Fuel Model 28
Fuel Model 97
Fuel Model 98
Fuel Model 99
Water
County Boundary
State Highway
Other Road
USGS 7.5-minute Quad Boundary
Quad Grid

Cross Section of Fuel Map
from Northern Sacramento Valley to Portola

Click thumbnail photos for details of each fuel model

Above is a typical Fuel Model Map produced from Fuel Model GIS data for a slice of Northeastern California . The thumbnail pictures (not the actual location) indicate the type of vegetation and fuel loads associated with each fuel model shown in the key. By clicking on the thumbnail photos, you can obtain more detailed technical information about each fuel model.

Background	Metadata	Sample Map	Download GIS Data Set

Return to Fire

California Fire Plan

A Framework for Minimizing Costs and Losses from Wildland Fires

March 1996

Robert J. Kerstiens
Chairman
California State Board of Forestry

Richard Wilson
Director
Department of Forestry and Fire Protection

Douglas P. Wheeler
Secretary for Resources
The Resources Agency

Pete Wilson
Governor
State of California

Approved by the State Board of Forestry in accordance with the requirements of Section 4114 of the Public Resources Code at South Lake Tahoe on September 10, 1996

Robert J. Kerstiens

Acknowledgments

The California Board of Forestry wishes to acknowledge the efforts of individuals who played significant roles in the development of the California Fire Plan. Director Richard Wilson fully endorsed the Fire Plan and set the course by giving it the Department's highest priority. There are many individuals who played a part in developing this plan.

Jack Wiest provided leadership for the team. Wayne Mitchell assisted Jack with behind-the-scenes administrative details. Jack and Wayne were the consistent leaders needed for the duration. Loyd Forrest, Cathy Bleier, Greg Greenwood, Robin Marose, and the Fire and Resource Assessment Program staff contributed the primary planning framework, a key component that successfully tied together the various concepts. Don Rascon, one of the state's top fiscal experts, applied his expertise by shaping the plan into an acceptable document for presentation to the Department of Finance, Resources Agency and legislative fiscal committees. Hank Weston, Jerry Geissler and Wayne Mitchell led the Level-of-Service team that developed the LOS concept. Hank and Jerry were effective at communicating and ensuring the plan had practical application on the ground. The development of the prefire management focus was led by Doug Wickizer and Bob Irby. The field level planning concept involving stakeholders in the decision making process was organized by Bob and Doug.

Thank yous are in order for the assistance provided by Jon Kennedy, Gary Biehl, and Karen Barnette of the USDA Forest Service. Special thanks to Ronny Coleman, State Fire Marshall, for his review. He recognized the need for local government involvement and identified regulations and programs that will facilitate local participation.

The early stages of the Fire Plan were directed by the Fire Plan Steering Committee.

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Dean Cromwell, Executive Officer, Board of Forestry
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Cathy Bleier, Acting Chief, Fire and Resource Assessment Program
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Hank Weston, Nevada-Yuba-Placer Ranger Unit
Jack White, Cascade Area Chief
Jack Wiest, Fire Protection - Cooperative Fire Protection

This team deserves a big **thank you** from the Board of Forestry. Dedicated personnel (employees who all too often go nameless) keep the Department of Forestry and Fire Protection in the leadership role for wildland fire protection.

Robert Kerstiens, Chair
California Board of Forestry

California Board of Forestry Members

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Executive Summary

The State Board of Forestry and the California Department of Forestry and Fire Protection (CDF) have drafted a comprehensive update of the fire plan for wildland fire protection in California. The planning process defines a level of service measurement, considers assets at risk, incorporates the cooperative interdependent relationships of wildland fire protection providers, provides for public stakeholder involvement, and creates a fiscal framework for policy analysis.

Goal and Objectives

Overall goal is to reduce total wildfire costs and losses.

The overall goal is to reduce total costs and losses from wildland fire in California by protecting assets at risk through focused prefire management prescriptions and increasing initial attack success.

The California Fire Plan has five strategic objectives:

○ To create wildfire protection zones that reduce the risks to citizens and firefighters.

○ To assess all wildlands, not just the state responsibility areas. Analyses will include all wildland fire service providers — federal, state, local government, and private. The analysis will identify high risk, high value areas, and develop information on and determine who is responsible, who is responding, and who is paying for wildland fire emergencies.

○ To identify and analyze key policy issues and develop recommendations for changes in public policy. Analysis will include alternatives to reduce total costs and losses by increasing fire protection system effectiveness.

○ To have a strong fiscal policy focus and monitor the wildland fire protection system in fiscal terms. This will include all public and private expenditures and economic losses.

○ To translate the analyses into public policies.

Fire Plan Framework

Five major components will form the basis of an ongoing fire planning process to monitor and assess California's wildland fire environment.

Fire Plan key product is development of wildfire safety zones.

- **Wildfire protection zones.** A key product of this Fire Plan is the development of wildfire safety zones to reduce citizen and firefighter risks from future large wildfires.
- **Initial attack success.** The fire plan defines an assessment process for measuring the level of service provided by the fire protection system for wildland fire. This measure can be used to assess the department's ability to provide an equal level of protection to lands of similar type, as required by Public Resources Code 4130. This measurement is the percentage of fires that are successfully controlled before unacceptable costs are incurred.

  Knowledge of the level of service will help define the risk to wildfire damage faced by public and private assets in the wildlands.
- **Assets protected.** The plan will establish a methodology for defining assets protected and their degree of risk from wildfire. The assets addressed in the plan are citizen and firefighter safety, watersheds and water, timber, wildlife and habitat (including rare and endangered species), unique areas (scenic, cultural, and historic), recreation, range, structures, air quality. Stakeholders — national, state, local, and private agencies, interest groups, etc. — will be identified for each asset at risk. The assessment will define the areas where assets are at risk from wildfire, enabling fire service managers and stakeholders to set priorities for prefire management project work.
- **Prefire management.** This aspect focuses on system analysis methods that assess alternatives to protect assets from unacceptable risk of wildland fire damage. Projects include a combination of fuels reduction, ignition management, fire-safe engineering activities, and forest health to protect public and private assets. The priority for projects will be based on asset owners and other stakeholders' input and support. Prefire management prescriptions designed to protect these assets will also identify who benefits and who should share in the project costs.

Assess alternatives to protect assets from wildfire.

- **Fiscal framework.** The Board and CDF are developing a fiscal framework for assessing and monitoring annual and long-term changes in California's wildland fire protection systems. State, local, and federal wildland fire protection agencies, along with the private sector, have evolved into an interdependent system of prefire management and suppression forces. As a result, changes to budgeted levels of service of any of the entities directly affects the others and the services delivered to the public. Monitoring system changes through this fiscal framework will allow the Board and CDF to address public policy issues that maximize the efficiency of local, state, and federal firefighting resources.

These are Fire Plan framework applications:

- Identify for state, federal, and local officials and for the public those areas of concentrated assets and high risk.
- Allow CDF to create a more efficient fire protection system focused on meaningful solutions for identified problem areas.

Focus on what public can do to reduce costs and losses.

- ○ Give citizens an opportunity to identify public and private assets to design and carry out projects to protect those assets.
- ○ Identify, before fires start, where cost-effective prefire management investments can be made to reduce taxpayer costs and citizen losses from wildfire.
- ○ Encourage an integrated intergovernmental approach to reducing costs and losses.
- ○ Enable policy makers and the public to focus on what can be done to reduce future costs and losses from wildfires.

Chapter 1

Findings and Recommendations

The Board of Forestry's California Fire Plan findings and recommendations were developed by the Fire Plan working team. These findings and recommendations are summarized into three categories:

- ○ Levels of Wildland Fire Protection Services
- ○ Wildland Fire Protection Fiscal Issues
- ○ Prefire Management to Reduce Wildfire Costs/Losses

Levels of Wildland Fire Protection Services

A primary Board of Forestry responsibility is set forth in Public Resources Code Section 4130, which directs the Board to classify all lands within state responsibility areas (SRA) based on cover, beneficial water uses, probable erosion damage and fire risks and hazards; to determine the intensity of protection to be given each type of wildland; and to prepare a fire plan to assure adequate statewide fire protection so that lands of each type be assigned the same intensity of protection. With the recent integration of the State Fire Marshal's office, the responsibility for the protection of structures included in Health and Safety Code Sections 13143, 17920.7, 17921, and 18930 is considered in the PRC 4130 evaluation.

Board of Forestry is responsible for preparing a Fire Plan to assure adequate statewide protection.

This California Fire Plan is the result. It is the Board's approach to assessing the level of wildland fire protection.

Findings

1. The history of California wildfires indicates that the following trends will continue.
   - Risk from wildfire to life, property, natural resources, and firefighter safety is increasing.
   - Population will grow and more people will live and use wildland areas, especially in the Central Sierra and in the Southern California counties of Riverside, San Bernardino and San Diego.

- Topography and climate support ecosystems where large wildfires can be expected.
- Drought and fuel moisture conditions will be unpredictable but almost always dangerous in fire season.
- More structures will be constructed in areas that are very susceptible to wildfire.
- Historical legacy of narrow roads, difficult entrance, insufficient water supplies, flammable building construction and location that make many communities and homes wildfire-prone still exits.
- Public demand for wildland fire protection and other services will increase.

2. Deteriorating forest health, increasing fuel loads and other factors have led to more intense, destructive wildfires; unabated this pattern will continue.
3. Assets at risk will increase, especially watershed assets, because of the rapid rise in the demand for water to supply more people. Based on population projections, the potential for accelerating loss of protected assets, especially life and property, will be greater from disastrous wildfires.
4. Large wildfires do not respect political or property boundaries. Historically, a strength of California's firefighting agencies is found within a concept of mutual cooperation at the federal, state, and local levels of government. Day-to-day mutual aid for initial attack, as well as a statewide mutual-aid system for fire disasters, are the basis of this cooperation and coordination. The ability to rapidly mobilize, effectively deploy and support large numbers of specialized firefighting resources is essential to cope with large multiple fires. Hence, CDF, in cooperation with other fire agencies, must maintain infrastructure, including communications and capital improvements necessary to facilitate such a response.

Large wildfires do not respect political or property boundaries, thus cooperation among fire agencies is necessary. (Department of Forestry and Fire Protection photo)

5. Fire protection forces in California must have sufficient depth to respond to large, multiple wildfires and still prevent other small fires from becoming large damaging fires. CDF plays a key role in supplying and coordinating such forces; it should maintain and enhance this ability. The 1985 Fire Plan includes a model to provide adequate depth of resources that show CDF needing 96 additional engines and 825 personnel for managing large fires using the Incident Command System. There is a greater need today as reflected in the California Fire Plan.

Recommendations

1. The Board of Forestry directs CDF to further develop and implement a new Fire Plan framework that includes:
   - Level of service (LOS) initial attack success and major fire failure rates.
   - Identification and assessment of assets protected, covering both commodity (economic) and non-commodity assets.
   - History of wildfires by intensity levels, size and vegetation types. Identification and rankings of high-value/high-risk wildland areas for use by local, state, and federal agencies and the private sector for allocating prefire management and suppression resources.
   - Severe fire weather rankings to relate probability that large damaging fires will occur by local area.
   - History and projections of changes in total costs and losses of California's wildland fire protection system that can result from potential increases or decreases in local, state, and federal agency expenditures and private-sector investments.

CDF will implement a fire plan framework that includes LOS, assets, fire history and costs and losses.

2. CDF should identify options to expand its suppression force to meet the multiple, large fire scenario (such as the 1985 Fire Plan's proposal to retain, in a reserve fleet, 96 engines that were being replaced) and determine a cost-effective way to staff these engines with trained personnel in severe fire weather in targeted areas identified in the California Fire Plan assessment framework. The number of reserve engines should be increased to 100 for the California Fire Plan. This allotment would:
   - Allow better management of SRA fires by minimizing CDF's dependence on the reduced federal agencies resources.
   - Keep cost under control because of reduced ordering through the Office of Emergency Services, thereby better controlling emergency fund expenditures.
   - Help limit the need to exceed maximum drawdown when there are large multiple fires, as now occurs.

Create reserve fire engine fleet for multiple fire responsibility.

3. CDF should assess and report back to the Board annually on what can be done during the next five years to reduce the impact in numbers and damage of large, disastrous fires in California annually.
4. CDF should use the new fire plan assessment framework at the ranger units and for creating local forums to obtain expertise and other input from citizens, community groups, local agencies and other stakeholders on assets protected. The questions of wildland resource assets and structure protection can be better addressed at the ranger unit community levels, in terms of level of service, benefits and financial responsibilities.

Create local stakeholder forums to improve fire protection.

5. The new fire plan assessment framework also should be applied to federal wildlands. The Board of Forestry has assigned its Resource Protection

Committee to work with federal agencies that are primary participants in California's wildland fire protection system. The focus would be the complementary relationships of changes in federal agencies' budgets and policies that could affect California's total costs and losses from wildfires on federal, state, and local responsibility lands. Agencies, such as the USDA Forest Service, Bureau of Land Management, Bureau of Indian Affairs, National Park Service, U.S. Fish and Wildlife Service, Environmental Protection Agency and Federal Emergency Management Agency should be invited to participate.

Wildland Fire Protection Fiscal Issues

Findings

1. Multi-year fiscal problems are occurring at all governmental levels, constraining the availability of funding to address the increasing workload, costs and losses of the California wildland fire protection system.
2. The increasing number of structures and people in California wildlands and the growing importance of the state's natural resources create a growing demand to fund additional wildland fire protection services for both the structures and the wildland resource assets.
3. The primary fiscal responsibilities for the initial attack responsibilities: (1) for federal wildland fire protection are the federal taxpayers, (2) for privately owned wildland fire protection are the state taxpayers, and (3) for structure fire protection in wildland areas are the local taxpayers. However, during the annual fire season, the state and federal taxpayers provide a minimum level of structural fire protection that is incidental to their primary missions of wildland fire protection. Similarly, in most wildland areas, local taxpayers provide year-round wildland fire protection on both state and federal responsibility areas that is incidental to the local government primary mission of structural fire protection.
4. Over the last decade, part of the increased costs for additional initial attack wildland resource protection and structural protection have been funded by local taxpayers through property taxes, fire district fees and volunteer firefighters. However, when a wildland fire overwhelms local resources and reaches a major fire status, both the state and the federal taxpayers pay for the costs of wildfires, structure protection, and the resulting disaster relief.

When wildfire overwhelms local forces, both state and federal taxpayers pay for resulting costs and losses.

5. For the local taxpayers, the following continue to increase: (1) the structural values and number of people being protected on wildlands, (2) the costs of wildland and structure initial attack fire suppression funded at the local levels, and (3) the losses from the extended attack and larger fires.
6. For state and federal taxpayers, the following will continue to increase: (1) extended and large fire emergency fund expenditures for wildland fires, (2) protecting structures during initial attack and extended attack fires, and (3)

state and federal agency disaster expenditures for damages to wildland resources and structures.

7. Health and Safety Code Section 13009 allows for recovery of fire suppression costs which, when obtained, be placed back into the state's general fund rather than invested in a prefire management program.

Prefire management investments can reduce emergency fund costs.

8. There is a direct relationship between reduced expenditures for prefire management and suppression and increased emergency fund expenditures, disaster funding, and private taxpayers expenditures and losses. Reduction of prefire management or suppression resources allows more fires to become major disastrous fires. Major fires create additional suppression and disaster relief costs at all levels of government and increase citizen and business losses.

9. According to representatives of the insurance industry that insures structures in California wildland areas, (1) the insurer average costs and losses are about $1.09 for each $1.00 received in premiums, and (2) the urban dwellers are subsidizing the wildland homeowner through service-wide rating schedules.

Recommendations

1. To better evaluate future public policy changes, CDF should annually refine and update its comprehensive wildland fire protection fiscal framework to allow a more systematic assessment of the future costs and losses to California taxpayers. This fiscal framework should continue to include summaries of annual expenditures by local, state, and federal agencies; economic losses of the state's resources; and private-sector costs and losses.

To reduce costs and losses, expansion of the prefire management initiative should be considered.

2. To reduce the future total costs and losses to California taxpayers, the following actions and ideas should be considered to support a major new state prefire management initiative:
   - Continue to implement the new CDF prefire management initiative and the new Fire Plan assessment framework by September 1998.
   - Redirect fire cost recovery money from the General Fund to support an investment in reducing wildland fire hazards.
   - Provide a tax credit, as part of the governor's proposed tax-cut program, for private taxpayer investments in reducing wildland fire hazards in areas that have been identified under this fire plan framework that will reduce the state taxpayer's future suppression costs.

The Board and CDF will work with insurance industry to reduce taxpayer and citizen losses.

3. Get the insurance industry to develop an approach to reduce taxpayer and insurance underwriting losses.
4. Ensure a major federal prefire management initiative on federal wildlands in California. The purpose is to reduce total federal taxpayer costs for wildland fire protection.

Prefire Management Program to Reduce Wildfire Costs and Losses

Findings

1. Suppression of fire in California's Mediterranean climate has significantly altered the ecosystem and increased losses from major fires and fire protection costs. Historical fire suppression has increased:
   - periods between fires
   - volumes of fuel per acre
   - fire intensities
   - fire damage and losses
   - fire suppression difficulties, and
   - total taxpayer costs and losses.
2. With continued fire suppression in wildland areas, fuel volumes per acre will continue to increase, unless a substantial long-term program of fuel reduction is implemented.
3. Fuel loading problems are occurring on federal and state responsibility areas, as well as in wildlands within city limits, which are local responsibility areas.
4. Similarly, California's eight straight years of drought increased the dead and dying vegetation, the volumes of drier fuel per acre, and the acres with vegetation fuel ladders, all of which contribute to increased size and severity of fires resulting in greater costs and losses.
5. To address the long-term trends of fuel loading increases and population growth, CDF is implementing a prefire management initiative that combines the existing vegetation management, fire prevention and engineering programs into a coordinated effort with the objectives of reducing fire hazards, improving the effectiveness of ignition management, and reducing losses and costs to California's Wildland Fire Protection System.

A prefire management initiative is being implemented.

6. Prefire management can serve as a tool to reduce the overall emissions caused by wildland fires. Based on the annual average acres burned by wildfire from 1985-1994, wildfire is causing the emission of almost 600,000 tons of air pollutants per year.

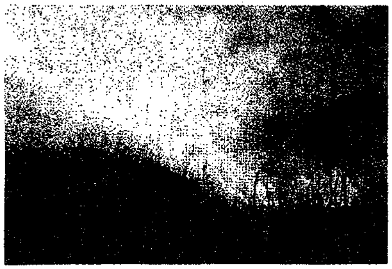
Wildfires cause an estimated 600,000 tons of air pollutants annually.

7. There are tradeoffs between taxpayer investments in prefire management and the related state and federal emergency fund (fire disaster) expenditures, ecological and natural resource losses, private citizen losses, and safety problems for civilians and firefighters during wildland fires.
8. With continued population-driven increases of people and structures in the wildlands, there are more life and property assets at risk in wildland areas, and increasing risks to ecological, economic and natural resource assets. This increases the values of wildland homes and other structures, as well as the number of wildland fires caused by people.

9. To reduce the wildland fire protection costs to taxpayers, development of wildfire protection zones and fire hazard mitigation measures (including ignition-resistant building standards) are needed as part of the local government planning and land-use decisions on permitting developments in wildland areas within incorporated cities and unincorporated areas.
10. A prefire management database is needed to provide more definitive risk assessment information to the public and the insurance industry, code officials, building industry and local fire jurisdictions. The objectives are to establish comprehensive minimums for wildfire protection zones, develop ignition-resistant building construction for improved reduction of fire hazards around wildland structures, and provide insurers and homeowners with information on reducing risks and support more equitable insurance rating for wildland structures.
11. The public doesn't sufficiently understand the risks and impacts of wildfires on natural resource assets, structures and people living and recreating in California wildlands. Agencies have not adequately communicated those risks. There is a false sense of security among wildland homeowners that they are not at risk if there are fire protection organizations, insurance policies for fire coverage, and minimum fire prevention prescriptions are met.

Recommendations

CDF has developed a prefire management initiative for state responsibility areas and will provide technical assistance to help local governments develop prefire management programs on local responsibility areas. The Board will encourage federal agencies to increase efforts on their lands and participate in joint efforts in the wildland intermix.



In California's Mediterranean climate, the question is when, not if accumulated fuels will burn. (California Department of Forestry and Fire Protection photo)

1. CDF will develop prefire management data that will:
   - Support state, local and federal agencies' efforts to implement a coordinated prefire management program on California wildlands.
   - Provide the insurance industry with better fire hazard risk assessment data for underwriting, rating and pricing fire protection policies in wildland areas. These are incentives to homeowners to invest in fire hazard reduction efforts.
2. To increase the market alternatives for using biomass materials removed from wildlands and to reduce future dependence on prescribed fire and vegetation management burns, CDF, in conjunction with other state agencies, should develop an assessment of future biomass marketing opportunities for California. It should include projections of potential market uses and actions local, state and federal governments could take to expansion of those markets.

Fire prevention education programs should communicate levels of risk to people living in wildlands.

3. The fire prevention education programs of local, state and federal agencies and private industry should be communicating the level of risk to the people who live in wildland areas. An evaluation should be made to determine the correct message to influence people to modify their behavior. That message should incorporate the standards for both vegetation management and ignition resistant building construction, as well as what citizens and businesses can do to reduce wildfire risks.
4. The Board of Forestry supports examining legislation that would condition state disaster relief on the development and implementation of prefire management programs on wildlands. The Board recommends that the federal disaster relief program be examined similarly.
5. To provide state funding for prefire management projects, legislation should be considered to provide that fire cost recovery funds collected by CDF be returned to CDF's budget for implementing the projects, as a means of reducing wildfire costs and losses.
6. Legislation should be considered to authorize local government to create special service districts for prefire management projects. CDF will prepare recommendations as part of its in-depth plan.
7. To remove a major obstacle to increased vegetation management burns, with their potential for reducing wildfire costs and losses, liability limits should be examined for conducting such burns in high-risk/high-value wildlands. The state's worker compensation program may be a model for needed changes.
8. Given the potential for prefire management to reduce the total level of air pollutant emissions from wildfire, the state, federal, and local wildfire protection and air quality agencies should jointly develop policies for reducing air pollutant emissions from California wildfires.

Chapter

Fiscal Framework

The Board of Forestry launched an assessment to determine wildfire costs and losses, all of which are paid for by California's citizens. The Board is incorporating its recommended solutions in its California Fire Plan, which is a policy document for guiding the California Department of Forestry and Fire Protection wildfire programs.

The plan includes a new fiscal framework for assessing and monitoring California's wildfire protection systems, and focuses on annual and long-term changes in wildfire costs and losses.

The new fiscal framework will allow state policy makers to systematically identify and assess the changes that affect the state taxpayers in terms of costs and losses. This new fiscal framework will also be used to monitor effects of new prefire management initiatives.

The California Fire Plan objective is to reduce total costs and losses from wildfire in California.

The California Fire Plan objective is to reduce *total* costs and losses from wildfire in California. In an era of shrinking public revenues, the increasing wildfire problem is creating new challenges for agencies to cooperatively make better use of their available resources. Wildland fire protection agencies are being asked to reduce the costs and losses from wildfires by taking initiatives to reduce the size, severity and damage from the large wildfires that occur in California annually. This requires allocating some resources to this objective and additional front-end investments to reduce the future total costs and losses to California citizens.

The state, local and federal wildfire protection agencies, along with the private sector, have evolved an interdependent system of prefire management and suppression forces. As a result, changes in budgeted levels of any of the entities directly affects the levels of wildfire protection services delivered to the public.

For example, the USDA Forest Service (USFS) recently made policy changes on the management of its emergency firefighting funds, reduced its initial attack fire suppression budget, and reduced budgets for other resource management programs. To deal with these changes, it proposes to cut engine staffing from five firefighters to three and to staff the engines five days a week instead of seven. Staff reductions in resource management programs mean fewer trained employees will be available for management positions on large fires. These cuts equate to a potential 20-50 percent reduction from the USDA Forest Service's 1994-95 suppression capability for California.

The suppression force available to fight large disastrous wildfires on public or private lands is significantly decreased. As a result, unless state and local governments or the private sector then increase their suppression forces, the level of wildland protection service delivered to the public is decreased. And more small fires will become large disastrous fires, thereby increasing the total taxpayer costs and citizen losses at all levels of government.

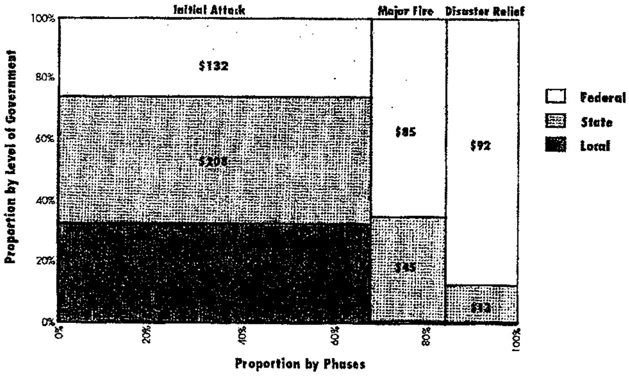
To assess the future success of CDF along with existing and potential changes in policies and fiscal allocations, the state must also periodically re-examine its relationship with the other sectors that make up the interrelated California wildland fire protection system. The relationship among the three government sectors can be assessed by addressing three questions concerning responses by each sector to California wildland fires:

○ Who is responding to reported wildfires? Federal, state or local agencies?

○ Who is responsible fiscally for the responses?

○ Who is paying for the responses?

Chart 1. Wildland Fire Protection Agency Budgets



Traditionally, the state, federal and local fire protection agencies have evolved with the following program objectives:

○ State Department of Forestry and Fire Protection — responsible primarily for protecting private or state-owned wildlands that have natural resource values as designated in the Public Resources Code, and for protecting certain state buildings.

- State Department of Forestry and Fire Protection through the State Fire Marshal — responsible for developing minimum building standards that apply at both the state and local levels for all occupancies designated in the building and fire codes.
- Federal agencies, such as the USDA Forest Service, Bureau of Land Management, National Park Service and the Bureau of Indian Affairs — responsible primarily for wildland fire protection of federally owned wildlands.
- Local government fire districts (city and county fire departments) — responsible primarily for protection of homes and other structures in wildlands.

Most of the previous public policy discussion of state, federal and local roles have cited these primary responsibilities for making the initial attack responses when a fire is reported in a wildland area.

However, that kind of discussion is incomplete. *Chart 1, Wildland Fire Protection Agency Budgets,* on page 18 summarizes the estimated 1993-94 state, federal and local governments' costs of California's wildland fire protection system. The chart further identifies wildland fire protection phases — initial attack, major fires and disaster relief — for each level of government.

In the second and third stages, roles and responsibilities get blurred in terms of who is responding, whose responsibility is it and who is paying. Historically, disaster relief is provided by the state to local government when local firefighting resources are overwhelmed. Similarly, federal relief is provided to state and local government when those resources are overwhelmed.

During fire disasters, state and federal agencies protect homes and people as well as natural resources.

When a wildfire escapes the initial attack stage and reaches disaster status as a major damaging and costly wildfire, available state, federal and local resources are dispatched to contain the fire and provide disaster relief without differentiating among the primary initial attack roles. The firefighters make no distinction as to whether they are primarily protecting federal wildlands, state wildlands or structures; they protect whatever is in the way of the fire.

The Agency Budgets chart reflects the fiscal results of that approach. It identifies that annually, significant expenditures are made:

- By the state, federal and local governments to provide initial attack responses to wildland fires.
- By state and federal governments to fight wildland fires on private, federal and state-owned lands.
- By state and federal governments to provide disaster relief resulting from major wildland fires.

The chart shows that state, federal and local agencies spent an estimated $921 million on California wildfires in 1993-94. About $172 million of it was spent by

462 locally funded fire departments responding to wildland fires that are the primary responsibilities of the state and federal governments. The local agencies' responses were incidental to their primary initial attack responsibility for structures. In summary, local fire departments' expenditures for wildland fire initial attack responses were approximately 9 percent of their total budget for structure fire protection; but cumulatively, the expenditures are significant statewide. The expenditures are significant locally funded expenditures for what is primarily a state (and occasionally a federal) responsibility.

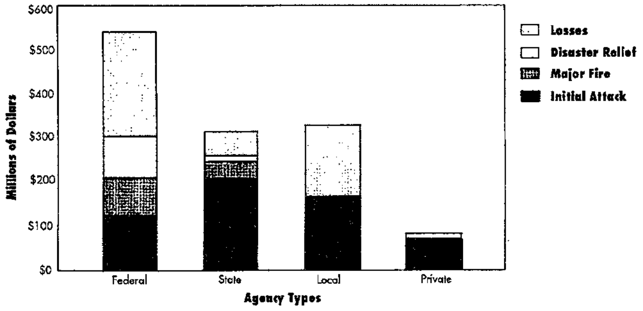
Although data is not yet available, a significant effort is also expended by state (and to some extent the federal) agencies responding to protect structures in wildland areas during the initial attack phase. There are three primary reasons for state, federal and local agencies responding to their counterparts responsibilities, be it structure or wildland resources:

- ○ Under a mutual-aid approach that reduces response times to all fires, whichever firefighting unit is closer responds to the fire.
- ○ When natural resources, structures or people are threatened by wildfire, the public doesn't care whether the nearest firefighting unit is funded from their local, state or federal tax dollars. They expect the units to respond as quickly as possible.
- ○ A fire starting on private or federal wildlands, or in a structure on wildlands, if not quickly contained can threaten the other two resources, creating state, federal or local firefighting costs and losses.

The public doesn't care whether the nearest firefighting unit is funded from their local, state or federal tax dollars. They expect the units to respond as quickly as possible.

To assess and monitor the total annual costs and losses from California's wildland fires, the annual costs of federal, state and local government agencies reflected in Agency Expenditure Chart are added to the annual losses and private sector costs. *Chart 2, California Wildland Estimated Suppression Costs and Losses*, reflects the total costs and losses from California wildland fires reflected in 1993-94 FY dollars. For losses, a 10-year history was used to derive average annual wildfire losses. Both the Agency Budgets chart and the total estimated Costs and Losses provide a fiscal framework that can be used by the state as well as the federal and local decision makers to identify and monitor trends among the sectors responsible for the total California's wildland fire protection system.

Chart 2. California Wildland Estimated Suppression Costs and Losses



Losses for federal agencies are estimates only due to insufficient data.

Chapter

Fire Plan Framework

Legislative Mandate

The Public Resources Code requires the Board of Forestry to develop a fire plan for the state responsibility wildlands that assures equal protection to lands of similar types. The California Fire Plan includes a new framework for a systematic assessment of the existing levels of wildland protection services, identifies high-risk and high-value areas that are potential locations for costly and disastrous wildfires, ranks the areas in terms of priority needs, and prescribes what can be done to reduce the future costs and losses.

The Board and CDF developed the new fire plan assessment framework that will identify where it is most cost effective to increase the level of wildland fire protection services to significantly decrease future wildfire costs and losses in those high-risk/high-value areas. CDF is implementing the new system in three pilot ranger units: Nevada-Yuba-Placer, Tuolumne-Calaveras and Riverside. In addition, CDF has made a budget change proposal (BCP) to expand the program to all 22 ranger units and six contract counties using this schedule:

Time Period	Task
November 1995—February 1996	Draft a regional vegetation zone map for the state. Design associated matrixes for setting up the LOS framework for the regional zone. Develop data sets, prepare prototype software systems, assemble products to take to the first test ranger units.
January—March 1996	Validate data sets, process and procedures in the first test ranger unit. Refine, revise and update CFES-IAM inputs as needed. Revise procedures as needed in preparation for going to the next two test units.
March—June 1996	Validate data sets, process and procedures in the next two test ranger units. Revise as needed in preparation for going to the remainder of the ranger units and contract counties.
June 1997	Produce state level of service map

Fire Plan Assessment System

This new California Fire Plan assessment system is reflected in *Chart 3, Fire Plan Assessment System* and described below.

The LOS rating is a new fire plan assessment system.

Level Of Wildland Protection Services (LOS): The LOS rating (see *Chart 4, Level Of Service*) is a ratio of successful fire suppression efforts to the total fire workload, a method to measure initial attack success and failure rates throughout California wildlands.

The LOS uses a Geographic Information System (GIS) that overlays a 10-year history of wildfires onto a vegetation type map and derives the average annual number of fires by size, severity of burning and assets lost. This data allows a LOS Success (and Failure) Rate calculation:

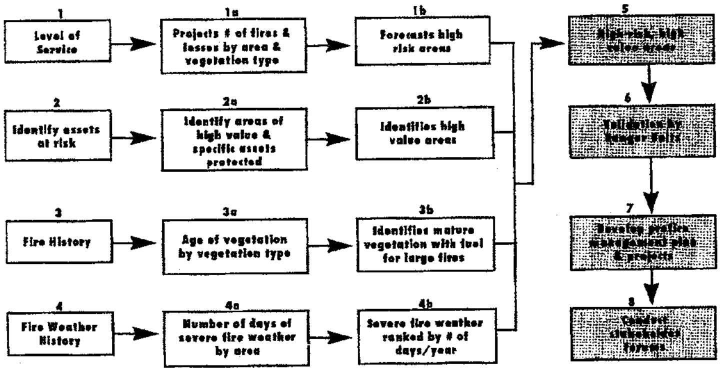
$$\text{SUCCESS RATE} = \frac{\text{annual number of fires that were small and extinguished by initial attack}}{\text{total number of fires}}$$

SUCCESS RATE = X percent

This results in an initial attack success rate in percentage of fires by vegetation type and by area. Similar areas can be compared locally, regionally or statewide using the GIS database.

Using the GIS databases, each wildland area of a community, ranger unit, region or statewide, can be ranked by age and type of vegetation to identify high-volume fuel areas that have accumulations of dead fuel with the potential for large *conflagrations.* Areas can be ranked by high, medium or low risk of potential as sites of large damaging *conflagrations.*

Chart 3. Fire Plan Assessment System


1
Level of Service
1a
Projects # of fires & losses by area & vegetation type
1b
Forecasts high risk areas
2
Identify assets at risk
2a
Identify areas of high value & specific assets protected
2b
Identifies high value areas
3
Fire History
3a
Age of vegetation by vegetation type
3b
Identifies mature vegetation with fuel for large fires
4
Fire Weather History
4a
Number of days of severe fire weather by area
4b
Severe fire weather ranked by # of days/year
5
High-risk, high value areas
6
Validation by Ranger Units
7
Develop prefire management plan & projects
8
Conduct stakeholder forums

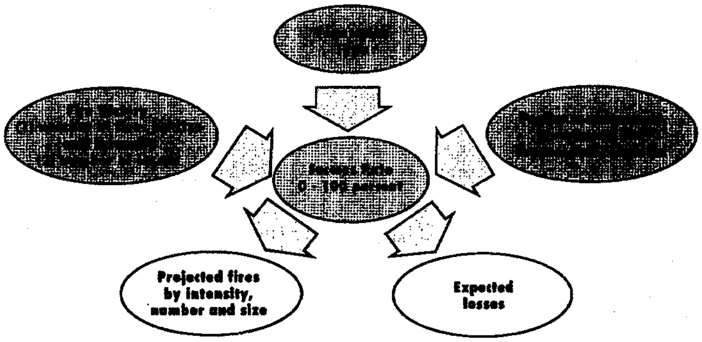
Assets at Risk: The assets at risk are the public and private assets that the wildland fire protection system is created and funded to protect. This framework identifies the following assets at risk from wildfires and delineates their economic and non-economic assets: timber, watershed, wildlife, unique scenic and recreation areas, range, wildlife, air quality, structures and people.

- ○ Using the GIS data, overlays of each asset are made on geographic maps of the state. This provides areas of individual and collective assets that are identified by community, ownership and protection responsibility.

Assets are what the system protects.

- ○ For each asset, relative rankings of high, medium and low values are made geographically.

Chart 4. Level of Service



Fire History: The GIS is used to overlay fire history data by vegetation type.

- ○ The fire history overlay results in identifying the age classes of vegetation and their related maturity stage. Each vegetation type has different maturity stages in terms of the volume of fuel per acre — as it progresses from green, high-moisture vegetation to a higher percentage of dead and dying vegetation with low moisture — and different stages in the development of fuel ladders to carry fires to the tops of trees.

Fire history defines vegetation maturity.

- ○ With the above data on vegetation age and maturity, the areas that have the potential for severe fires can be identified by vegetation type and geographical area.

Fire Weather History: The fire weather history is plotted on GIS maps.

- ○ The fire weather history, in terms of average number of days of severe fire weather, is plotted and mapped by geographic area.
- ○ Geographic areas are ranked by the average number of days of severe fire weather during peak fire season. This allows the identification of the higher risk areas in terms of probability of fires occurring during periods of severe fire weather.

Fire weather history identifies severe fire weather days.

Identify High-Risk/High-Value Areas: Based upon the analyses and the GIS databases described above, a ranger unit map is generated that identifies high-risk/high-value areas where large damaging wildfires are most likely to occur and become high-cost and high-loss conflagrations. These can be ranked from highest to lowest priorities for future resource allocations decisions.

Validate High-Risk/High-Value Areas by the ranger units: Most of the data used to generate the high-risk/high-value maps were developed from GIS overlays of databases for areas within ranger units. Much of this data needs to be validated on the ground by ranger unit personnel to assure that the high-risk/high-value and most likely to burn areas are properly mapped. Based upon this field review of the areas, modifications and corrections are input to the central GIS databases and revised maps are generated for use by the ranger unit and headquarters personnel in developing prefire management projects.

Prefire management projects decrease risks of high losses and suppression costs.

Identify Prefire Management Projects: The prefire management staff at the ranger units then develop a prefire management plan for the ranger unit. The prefire management plan includes specific projects for the high-risk/high-value areas that will *decrease the risks that a large fire in a specific area will occur, and create high costs to contain and high losses to the citizens.* The assumption used in developing the prefire management ranger unit plan is that a proposed prefire management project will reduce the costs and losses during periods of severe fire weather, which is when most of California's wildfire costs and losses occur. Thus, if a prefire management project is implemented, then the size and severity of a large fire burning in that specific high-risk/high-value area would be contained at a smaller size, would burn with lower temperatures and severity, would significantly reduce suppression costs and would result in significantly lower levels of losses.

Conduct Stakeholder Forums: The purpose is to acquaint stakeholders with the process; bring their expertise and knowledge to bear on the asset maps, which also identify areas of high, medium and low risk; to review the level of service in these locations, and to identify areas where the stakeholders consider the level unacceptable.

Ranger unit personnel will take the results of the above analyses into public forums with the following stakeholders:

Stakeholders help set priorities on prefire management projects

- ○ State, local and federal agencies with responsibilities for wildland protection in a specific area of the ranger unit, including USDA Forest Service, Bureau of Land Management, National Park Service; fire districts, county fire departments and other fire service cooperating agencies; local planning departments and county supervisors responsible for land-use planning.

- State, local and federal agencies with responsibilities for wildland assets at risk.
- Private and non-profit stakeholders that are concerned with the economic and non-economic assets being protected in a specific community within a ranger unit.
- People living in these wildland areas.

CDF will take the following information into these series of meetings:

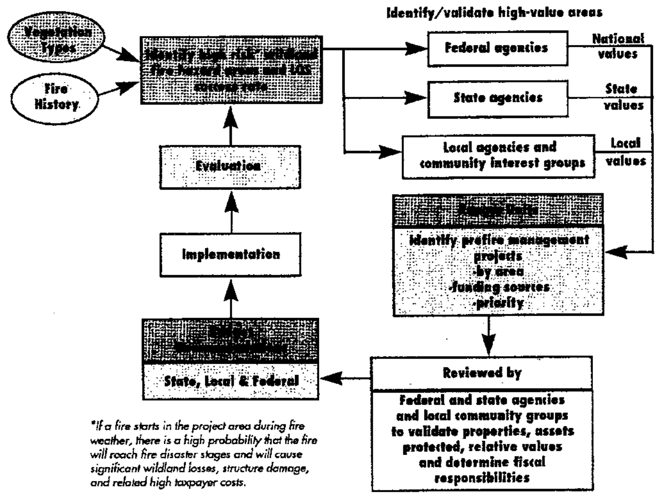
Input from the public is a critical part of the Fire Plan process. (California Department of Forestry and Fire Protection photo)

- What can be done by the community to develop wildfire protection zones.
- The existing LOS for the specific community area in terms of historical numbers, size and severity of previous fires and those projected to occur with no changes in the LOS. This reflects, the future success rates for preventing large disastrous fires.
- Identification of the high-risk/high-value maps, showing areas within the community, where large disastrous fires are likely to occur. The specific assets being protected and designated as high value areas within the community will also be delineated on the maps.
- Identification of the high-risk/high-value areas in the community with a ranking of the probability of fires occurring in severe fire weather.
- Prefire management plans with specific projects for reducing the risks and potential damage and suppression costs from disastrous fires.
- Identification of which assets are driving the need for prefire management projects and who is fiscally responsible for the assets at risk.

As reflected in *Chart 5, Wildland Fire Protection System,* the goal of this new framework approach is to identify for state, federal and local public officials and the public, those areas within the state responsibility areas that are high-priority areas in terms of assets at risk, and with a high probability of large wildfires with associated costs and losses. This will allow the public and government decision-makers to focus on what can be done to develop wildfire protection zones and reduce future costs and losses in these areas. An important aspect of this new framework is that prefire management programs aimed at reducing wildfire risks to citizens and firefighters, and minimizing costs and losses be considered and compared for evaluating existing programs and alternatives for reducing costs and losses from large disastrous wildfires in California.

The goal is to identify high risk areas with a high probability that large fires will occur.

Chart 5. Wildland Fire Protection System


Identify/validate high-value areas
Vegetation Types
Fire History
Identify high risk* wildland fire hazard areas and LOS success rate
Federal agencies
National values
State agencies
State values
Local agencies and community interest groups
Local values
Identify prefire management projects
·by area
·funding sources
·priority
Evaluation
Implementation
State, Local & Federal
Reviewed by
Federal and state agencies and local community groups to validate properties, assets protected, relative values and determine fiscal responsibilities

*If a fire starts in the project area during fire weather, there is a high probability that the fire will reach fire disaster stages and will cause significant wildland losses, structure damage, and related high taxpayer costs.

Chapter 4

Assets at Risk

Introduction

The primary purpose of wildland fire protection in California is to protect the wide range of assets found on California wildlands. These assets include life and safety; timber; range; recreation; water and watershed; plants; air quality; cultural and historic resources; unique scenic areas; buildings; and wildlife, plants, and ecosystem health. This section briefly describes these assets and discusses approaches to assessing their economic and non-economic values.

Knowledge of the types and magnitudes of assets at risk to wildfire, as well as their locations, is critical to fire protection planning. Given the limits on fire protection resources, these resources should be allocated, at least in part, based on the value of the assets at risk.

This analysis addresses two basic questions: What are the aggregate values of the assets at risk to wildfire? What are the losses, both economic and non-economic, in a fire? Where possible, estimates of values were made on a dollar-per-acre basis. The methodologies used, although exposed to some peer review, need further review and refinement that is part of the pilot projects in the three ranger units. Also, CDF is working with the Department of Fish and Game, State Water Resources Control Board staff, Department of Water Resources, USDA Forest Service, Los Angeles Flood Control District, Pacific Gas & Electric Co. and the East Bay Municipal Utility District and other stakeholders to refine our approaches to wildlife, plants, ecosystem health, watersheds and water.

The fire plan assessment framework will use three key techniques to relate each asset being protected to existing and potential levels of service and resource allocation priorities.

○ As reflected in the prefire management process descriptions in the appendix, CDF headquarters staff has developed GIS maps on assets at risk. From this data, CDF will produce ranger unit maps with overlays for each commodity and non-commodity asset protected. Each asset map will indicate whether the preliminary value of the asset in a given area is high, medium or low. These maps will be reviewed and refined at the ranger unit level.

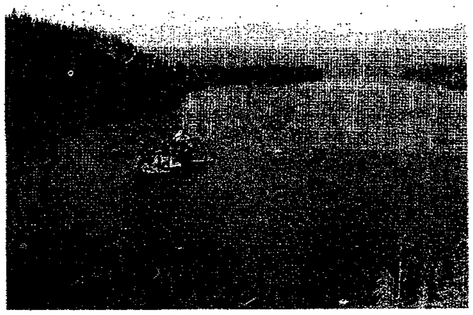
There are three key techniques for assets at risk: GIS maps, community meetings to validate assets and joint CDF/stakeholder funding

- Separate community level meetings will be scheduled with the respective stakeholders for each asset at risk. The purpose is to acquaint the stakeholders with the process and to bring their expertise and knowledge to bear on the asset maps. In effect the stakeholders will be asked to evaluate the preliminary rankings for levels of service based on economic and non-economic values. This process provides a sort of Delphi technique of using expert and asset owner judgments where quantifiable data is not available.
- CDF also will engage stakeholders in a process to identify who is willing to invest prefire projects that will protect the various assets. CDF's major reason for conducting prefire management projects is to reduce state suppression costs and disaster relief. Thus, CDF will allocate its state prefire project funds primarily on the basis of projects' potentials to reduce the suppression and state disaster funding costs that would occur in the project area under high-hazard fire conditions. However, where stakeholders are willing to provide funds to support prefire projects that would reduce the threat to assets at risk, CDF will consider undertaking such projects, even if the benefits in terms of reducing potential state suppression and disaster relief costs are less than might be achieved by other prefire projects competing for state prefire project funds.

Detailed explanation of the quantification and valuation approaches for each asset may be found in the appendix. The table, *Assets at Risk Framework Summary*, at the end of this chapter depicts the framework developed for estimating fire impacts. Resource assets presented here are air quality, range, recreation on public wildlands, structures, timber, water and watersheds, cultural and historic resources, unique scenic areas, and wildlife, plants and ecosystem health. No attempt was made to place economic value on the loss of human life or unique scenic areas, although there are methodologies for estimating such values. Their true value to society cannot be measured.

Assets may be of value locally, statewide or nationally.

For each resource, the assets at risk framework summarizes the asset value basis (i.e., the units in which fire impacts have been estimated) and the level of disaggregation (resource subtype and geographic area) of these values. The table also indicates the levels (local, state and national) at which the resources are valued. The manner in which "consumers" of a particular resource value it may differ from local to state to national levels. Some of the resources protected from fire in California even have international value. For example, the scenic Lake Tahoe Basin or the old growth redwood parks of the



The Lake Tahoe Basin, one of the state's most beloved natural resource assets, is facing extreme fire risks. (Photo courtesy of Department of Water Resources)

North Coast are considered of high value at the local, state and federal levels, as well as internationally.

The rest of this section briefly discusses each asset at risk. (The appendix provides more detail.) It should be emphasized that calculations of economic assets are preliminary and often highly aggregated. The estimates will be refined as fire plan implementation moves to the ranger units.

Air Quality

Air pollution from wildfires can affect, among other assets, visibility, human health, materials, vegetation, pollution rights and greenhouse gas accumulation. Quantifying impacts is difficult. First, there is insufficient data on the quantities of various pollutants that are emitted during wildfires of varying intensities burning in a wide range of fuels. Second, models of pollutant dispersion, though increasingly sophisticated, still leave much to be desired, particularly when trying to apply them to specific events rather than to longer-term emissions. Third, models estimating the impacts of various pollutant levels on human health have generally been geared toward examining chronic pollution levels, not episodic events such as wildfires. This area of empirical research has been almost ignored by the air quality agencies in California. There is an assumption that wildfires are "acts of God" and not manageable by man. However, this assumption is not true. As reflected in this fire plan framework, future wildfires are predicted and their losses, including levels of air pollutants can be managed before the fire occurs.

The estimated annual wildfire air pollutant emissions are 600,000 tons from CDF and USDA Forest Service fires.

As reflected in Appendix C, Table 3, the estimated annual wildfire air pollutant emissions are 600,000 tons from CDF and USDA Forest Service fires. This does not include Bureau of Land Management, Bureau of Indian Affairs, National Park Service or wildlands inside city limits fires. The estimated 600,000 tons of air pollutants annually are based on a ten year average of acreage burned by vegetation type annually. A joint initiative is needed between the Board of Forestry and the Air Resources Board to reduce air emission pollutants from wildfire. Estimates of air quality wildfire impacts have been developed for particulate matter, specifically PM10 (particulates 10 microns or smaller). For some basins, business can buy and sell rights to emit air pollutants based on banked credits. Based on these purchases, the wildfire air quality impacts range from $1 per acre to $15,000 per acre burned, depending upon the fuel type and the air basin. While these estimates include some measure of all of the above air quality related values, there are additional non-commodity values that are not well represented (for example, air quality impacts to areas of unique scenic quality).

The overall strength of the methodology used to develop these estimates is uncertain. The base air pollution impact model used is not widely accepted. Further, estimates of pollutants released from the open burning of given fuel types and loadings are not well researched and are highly generalized. This is an area needing more research by the local, state, and federal air quality and wildfire protection agencies.

Range

Range is primarily vegetation as forage, estimated to be worth $138 million a year in California. The value of forage lost to fire is based on the cost of replacing that forage for two years through feeding oat hay or alfalfa to the livestock. It was assumed that the probability of an acre of rangeland burning is the same whether it is grazed or not. Ungrazed acres were assumed to have a zero replacement feeding cost. To calculate an average loss per acre burned, averages were developed of replacement feeding costs per acre by type of grazed rangeland as a percentage of all grazed and ungrazed acres.

Rangeland types and associated replacement feeding costs were disaggregated to eight regions, nine cover types and five ownership classes, allowing a fairly detailed analysis of fire impacts. At the fully disaggregated level, replacement feeding cost estimates ranged from zero to $114 per acre of rangeland burned. The weighted average cost statewide is estimated at $8 per acre.

Recreation on Public Wildlands

Fire adversely affects recreation values on public and private land alike; however, the lack of data regarding recreation on private lands allows estimates only for public lands. The bulk of recreation on public wildlands occurs in national parks and forests, Bureau of Land Management holdings and state park lands. Recreation on public wildlands in recent years averaged an estimated 112.1 million recreation visitor days per year. A recreation visitor day (RVD) is equivalent to 12 hours of participation in any recreation activity. Based on USDA Forest Service data, the estimated average market value is $13.26 per RVD for wildland recreation in the state.

Based on this conservative value, an annual average value of $1.5 billion per year for recreation was calculated for public lands in the state. The impacts of wildfire on recreation values were estimated to range from $5 per average acre burned (for the Bureau of Land Management) to $107 per average acre burned (for the state parks system). Of course, where the areas that burn are particularly scenic, visible, or accessible to the public, the value impacts will be significantly greater.

Structures

Statewide, approximately one million housing units are within California's, including wildlands and wildland-urban interface areas. In total, these housing units have an estimated replacement value of $107 billion for the structures only. Based on fire records for 1985-94, an estimated 703 homes are lost annually to wildfire in California. Taking into account the value of dwellings, value of contents, other improvements, intangibles, uninsured losses, costs of disruption (lost wages, temporary housing, etc.) and insurance company transaction costs, the average loss per home burned from wildfire is estimated to be $232,000. Average total annual loss of California homes to wildfire is estimated at $163 million.

Average annual home losses to wildfire is $163 million.

Timber

The timber assets at risk represent the economic value of standing trees for conversion to wood products, such as lumber. Trees that will not be converted to wood products, such as those found on areas administratively or congressionally designated as wilderness, do not have timber value. Timber values were estimated using USDA Forest Service statewide inventory data and stumpage values determined by the State Board of Equalization. The estimates were disaggregated to six regions or cover types and four ownership categories.

Using this approach, the standing value of California commercial timber is estimated to be $105 billion. The timber value lost during a wildfire depends on the intensity of the fire. For a moderately intense, stand-replacing fire, it is estimated that the timber value lost will range from $2,538 per acre in the northern interior to $8,823 per acre on the central coast, based on assumptions about volume loss and salvage values. Less intense or more intense fires would cause different levels of loss.

Water and Watersheds

Water and watersheds have both commodity values and broad environmental values. As a commodity, water produces electrical power and quenches the thirst of people, industry and agriculture. Water impounded behind dams also provides important recreational opportunities. As an environmental resource, water sustains plants, animals and aquatic ecosystems. The many benefits of water are referred to as "beneficial uses." The six million acre feet of water delivered annually to residential, commercial and industrial consumers have a retail value approaching $6 billion. The 24 million acre feet of water used by agriculture each year have a value of about $1.5 billion. In an average year, California produces about 40,000 gigawatt-hours of hydroelectric power with a value of approximately $1.6 billion. In-stream uses of water for maintaining aquatic ecosystem function have a huge but incalculable value as well.

Fire can have beneficial and detrimental effects on water and watersheds. By removing vegetation and exposing mineral soil, fire impairs the ability of a watershed to hold soil in place and to trap sediment. As a result, increased amounts of sediment are delivered to streams, reducing both commodity and non-commodity beneficial uses. On the other hand, by decreasing evapotranspiration, fire can increase, at least on a temporary basis, the quantity of water delivered to streams. However in the wrong place at the wrong time — such as the fire-flood cycle commonly experienced in Southern California — this increased run-off and its large sediment load causes costly damage to downstream assets such as homes, roads, debris basins and other infrastructure.

Fire can have beneficial and detrimental watershed impacts.

The actual water and watershed effects that result from a wildfire vary greatly depending upon the size and severity of the fire, vegetation type, soil type, slope, proximity to a watercourse and other factors. Only a few general conclusions are drawn here regarding the economic impacts of fire on water and watershed resources. Large, intense wildfires can produce increased runoff worth from $3 to $12 per acre burned in the year after the fire. In addition to consumptive uses, this additional runoff can generate hydroelectricity. In one hypothetical example, $17.50 worth of hydroelectricity would be produced per acre burned in an intensive wildlife enhancement project during the first year after the fire. The value resulting from increased runoff will diminish rapidly as the burned area revegetates over the years following the fire. Fire-caused sedimentation can diminish reservoir capacity, costing $9 to $90 per acre burned in a large, intense fire. This risk is more imminent in reservoirs without large amounts of dead storage capacity, typically smaller reservoirs and reservoirs not originally designed to produce hydropower. Sediment removal after such a fire could cost $100 to as much as $1,000 per acre burned. Increased sedimentation also causes additional wear and tear on hydroelectric generation equipment, harms fisheries and has negative aesthetic impacts; none of those effects can be quantified easily. Fire and landslides triggered by lost vegetation are direct threats to water supply and hydro facilities, such as flumes borne on wooden trestles and canals on hillsides. Then there is the expense of watershed rehabilitation, such as reseeding or replanting vegetation or installing erosion controls: Reseeding grasses after wildfire costs $30 to $200 an acre; planting tree seedlings costs about $200 per acre.

Sediment removal after such a fire can cost $100 to as much as $1,000 per acre burned.

Overall, it is clear that the economic costs of intense wildfire impacts on water and watershed are greater than the benefits derived from increased water flow. CDF is working with the State Water Resources Control Board staff, Department of Water Resources, USDA Forest Service, Los Angeles Flood Control District, Pacific Gas & Electric Co., the East Bay Municipal Utility District, and other stakeholders, to improve these preliminary characterizations and valuations of water and watershed impacts.

Wildlife, Habitat, Plants, and Ecosystem Health

One of the more challenging categories of assets at risk covers wildlife, habitat, plants, and ecosystem health. First, it is difficult to develop economic values for these assets. A number of economic techniques can be applied, but they are often expensive and subject to significant limitations. This difficulty arises in large part because of the ways in which these assets are valued. Aesthetic values in particular do not appear in a market form and are difficult to quantify, let alone determine a per-unit value. Second, fire can have markedly different effects on wildlife, habitat, plants, and ecosystem health. Large fires do not burn evenly and as a result produce a mosaic of vegetation and postfire plant community succession. Alternatively, at a smaller scale, an intense stand-replacing fire can reduce habitat heterogeneity and foster a uniformity of food and cover value particularly in areas of similar slope, aspect and soil type. Both outcomes may be positive, negative, or exhibit no particular effect depending on the degree of habitat patchiness, the wildlife and plant species of concern, and other topographic, climatic and biological variables influencing fire effects. Thus, consistent generalization of the effects of postfire habitat conditions and their implications for wildlife, habitat, plants, and ecosystem health is not yet possible. An individual species may be favored, negatively affected, or exhibit no particular response to the postfire environment.

While wildfire-caused modification of one habitat type into another may in many cases be "value-neutral," in other cases, such as the loss of habitat for a threatened or endangered plant or animal species, we may be very concerned about conversion of habitat type. One key example here is the California spotted owl, which the USDA Forest Service has identified as a sensitive species. Scientists have identified wildfire and its potential impacts on the species' mature forest habitat as one of the biggest threats to the owl.

Scientists have identified wildfire and its potential impacts on the species' mature forest habitat as one of the biggest threats to the owl.

Long-lasting negative effects of a wildfire in present day fire regimes are likely limited to:

- Localized stream habitats, late seral or climax forest habitats sensitive to fire effects and requiring long periods before re-establishment.
- Some seral habitats that through direct and indirect fire effects do not effectively regenerate.
- Areas occupied specifically by species with unstable populations that are negatively affected by fire occurrence.

Overall, it is not yet possible to specify both the biophysical and economic ramifications of the interactions between wildfire and wildlife, habitat, plants, and ecosystem health. A number of experts have indicated, however, that when one considers qualitatively the economic effect of wildfires on all species, fire regimes and wildland habitats at the scale of the state, it is likely that fire, at least over the short term, has had a net neutral if not beneficial effect. On the other hand, specific fires in specific places at specific times can have significant adverse impacts on particular plant or animal species and/or their habitat. Given the dynamic nature of vegetation, wildlife populations and ecosystems, these impacts are of the greatest concern for listed species, those near the lower bound of population viability.

Other Resource Values

Other, significant resource asset values have not been addressed above. These include historic resources, such as very old structures or places where important events occurred, and cultural resources, such as archaeological sites and unique scenic resources, such as Yosemite National Park or the Lake Tahoe Basin.

California has 85,000 recorded historic buildings, most of which are located in wildland areas. There are over 100,000 recorded archaeological sites in California. It is estimated that there is a like number of undiscovered or unrecorded sites in the state.

Historic and cultural resources cannot easily be valued economically since they are not generally exchanged in the market and are often unique. Further, many people get satisfaction simply from the knowledge that these resources exist and are being protected in perpetuity ("existence" and "bequest" values in the terms of economics), regardless of whether they will ever visit them personally. Similar considerations apply to unique scenic resources. These special resources may have value to people at the local, state, national and even international level, adding further difficulty to attempts to place an economic value on them. Measuring recreation values of the actual usage of unique, scenic areas captures only a small part of their total value to society.

Assets at Risk Framework Summary

Resource	Asset Value Basis	Level of Disaggregation	Levels of Value*	Strength of methodology
Life and safety	Non-economic values are not quantified	By population density	National, state and local	High
Air quality	Non-economic values of pollutants; average dollar impact from particulate matter (PM10) emitted per acre burned	Air quality basins (13), basic fuel types (2), and by air pollutant emissions	National, state and local	Low
Range	Dollar cost of replacement feed per acre of rangeland burned	Values by regions (8), cover types (9) and ownership classes (5)	State and local	High
Recreation on public wildlands	Average dollar loss per acre burned; non-commodity assets also exist	Statewide average by public ownership categories (5)	National, state and local	Low
Structures	Average dollar loss per home burned; non-commodity assets also exist	Statewide average	State and local	High
Timber	Average dollar loss per acre burned	Values by regions (6) and ownership categories (4)	National, state and local	High
Water and watersheds	Range of economic impacts per acre for value of increased water yields; cost of sediment removal; loss of reservoir capacity; effects on hydroelectric generation; costs of watershed rehabilitation; non-commodity assets also exist	Statewide ranges of economic impacts	National, state and local	Low to medium
Wildlife, habitat, plants and ecosystem health	Qualitative discussion of the tradeoffs in fire impacts	Statewide	State and local	Low
Other resource assets, cultural and historic resources, unique scenic areas	These non-commodity assets cannot be quantified adequately; descriptive enumeration only	Statewide (generically) or place-specific	National, state and local	Low to medium

*May or may not be cumulative.

Chapter

Prefire Management Initiative

Introduction

Over time, all California's wildlands *will* burn. However, various factors contribute to increased risks that fires will occur; that they will be larger, more intense and more damaging; that fighting them will cost more; and that they will take a higher toll (in economic and non-economic terms) on the people of California and, in some cases, on stakeholders from a broader arena, such as federal land and resources owned by all United States citizens.

CDF has initiated a prefire management initiative to reduce wildfire fires and costs of suppressing fires. The prefire management initiative includes a systematic application of risk assessment, fire safety, fire prevention and fire hazard reduction techniques.

The prefire management initiative includes a systematic application of risk assessment, fire safety, fire prevention and fire hazard reduction techniques.

The state's extreme diversity and complex pattern of land use and ownership require equally diverse and complex techniques to effectively manage the fire environment. Some options are the responsibilities of state, federal and local governments; others fall to private citizens or businesses; most are joint responsibilities. Custom strategies for each situation can be created through combinations of prefire management, suppression, and postfire management. They should lessen the costly impacts of future wildfires and offer alternatives to continually increasing suppression forces.

Some background: Vegetation in California's Mediterranean climate was dominated by a complex succession ecology of more, smaller and less damaging wildfires before European settlement began. The evolution of fire suppression since then has produced these results:

- Increasing life, property, resources and ecological losses.
- Difficulty of fire suppression, increasing safety problems for firefighters and reducing productivity by fire crews on perimeter lines
- Longer periods between recurring fires in many vegetation types by a factor of 5 or more. For Ponderosa pine vegetation areas on certain western Sierra slopes,

for example, the average period between fires is 175 years, where it once was 30 to 40 years.

- Increasing volumes of fuel per acre.
- Increasing fire intensities.
- Increasing taxpayer costs and asset losses.

Other factors also contribute to a complex fire environment prone to large disastrous wildfires:

- More people are living and recreating in wildland intermix areas. That adds to the demand for — and value of — finite natural resources in the wildland, and increases ignition sources, resulting in more fires.
- California's extended drought increased the dead and dying vegetation, the volumes of drier fuel per acre, and the number of days annually of lower humidity and fuel moisture.
- Continued set-asides of federal lands, without an aggressive prefire management program, limit fuels management and contributes to the annual fuel loading increases. (Supporting data on increased fuel volume is contained in the USDA Forest Service draft environmental impact report on the California spotted owl.)

Even when fires are not necessarily larger, they are burning more intensely. They are more costly to control and create greater risk of losses to the resources, improvements and people in wildland areas; examples include fire storms in the Oakland Hills (1991), Southern California (1993) and Marin County (1995). In the 10 days between October 25 and November 3, 1993, wind-driven wildland fires consumed over 189,000 acres of valuable Southern California watershed and wildlife habitat. It also damaged or destroyed 1,260 structures, claimed three lives and injured hundreds of people. The cost of suppressing these fires is estimated at nearly $60 million; the damage will exceed $1 billion.

This new fire environment requires the combination of new partnerships and strengthening old ones to provide a fire protection system that will ensure natural resource protection and provide for an acceptable level of public health and safety. CDF's new system emphasizes prevention and minimizing risk as well as trying to make better use of existing resources because of shrinking public revenues.

The prefire management initiative:

- addresses the components of fuel loading, fuel arrangement, land-use patterns, building construction standards and ignition management;
- gives priority to high-risk, high-value areas most likely to burn under severe fire weather conditions; and
- focuses effort by more aggressively emphasizing fire prevention, vegetation management, land-use planning and forest health programs.

Key Components of Prefire Management

Fire Prevention

CDF addresses fire prevention through its engineering, education and law enforcement programs. Their shared objective is reduced fire hazard and risk. This is more narrowly addressed in a planning process based on ignition management and loss reduction; it includes biomass harvesting, fire resistant landscaping, mechanical and chemical fuels treatments, building construction standards, infrastructure, and land use planning. The basic planning unit is the fire management analysis zone (FMAZ).

Ignitions are managed by preventing fires likely to exceed the capabilities of available attack forces and could result in large damaging fires. Loss reduction is integral to mitigating large and damaging fires. Significant improvement can be attained by reducing hazards (fuel buildups around structures and communities) and working with private industry to implement hazard reduction plans around residential developments in the rural-urban intermix areas.

Ignitions are managed by preventing fires.

Successful programs permit more effective utilization of CDF's initial attack forces and enhance firefighter safety.

Vegetation Management

An average of 30,000 acres a year have been treated with prescribed fire.

Since 1981, approximately 500,000 acres — an average of 30,000 acres a year — have been treated with prescribed fire under the vegetation management program. Prescribed fire has been the means of fuels management on virtually all that land. However, a program review has identified needed changes.

The typical vegetation management project in the past targeted large wildland areas without assessing all of the values protected. Citizen and firefighter safety and the creation of wildfire safety and protection zones are a major new focus of the new prefire management program. Now, increasing population and development in state responsibility areas often preclude the use of large prescribed fires. (They remain an option in less populated areas.)

The vegetation management program will shift emphasis to smaller projects closer to the new developments, and to alternatives to fire, such as mechanical fuel treatment. In some instances the

Prescribed fire projects such as this reduce risks to life and assets. (Photo courtesy of San Francisco Chronicle) program may be limited to simply providing wildland safety and protection zones around high value assets.

There also will be a new emphasis on quality over quantity of acres treated. Projects will be chosen that will provide the most cost-effective means of protecting assets at risk from major disastrous wildfires.

The Board of Forestry and the State Air Resources Control Board will develop a joint policy on the use of prescribed fire. The policy will recognize the value of prescribed fire in reducing the emissions of wildfire during the summer high-air-impact period.

Fire-Safe and Land Use Planning

Population increases create wildfire problems.

Population increases in wildland areas have raised strategic concerns about wildfire protection. Clearance laws, zoning, and related fire safety requirements implemented by state and local authorities need to address these factors:

○ **Fire-resistant construction standards:** We can no longer view a wildland fire as affecting only watershed, wildlife and vegetation resources; we must now consider their effect on people and their structures. Further, this increase in people and structures have provided increasing ignition sources for fire which, due to their proximity, can spread into the wildland. Building construction standards that encompass such items as roof covering, opening protection and fire resistance are designed to both protect the structure from external fires and to contain internal fires for longer periods.

○ **Hazard reduction near structures** (defensible space): The public image of defensible space as part of prefire management should be expanded to include such immediate benefits as improved aesthetics, increased health of large remaining trees and other valued plants, and enhanced wildlife habitat. The use of defensible space that provides landscape naturalness, along with its compatibility with wildlife, water conservation and forest health, should be emphasized.

○ **Infrastructure:** Effective fire protection in the intermix cannot be accomplished solely through the acquisition of equipment, personnel and training. The area's infrastructure also must be considered during the formulation of development plans. Specific fire hazard areas should be evaluated and reasonable safety standards adopted, covering such elements as adequacy of nearby water supplies, routes or throughways for fire equipment, addresses and street signs, and maintenance.

The ultimate objectives for fire-safe planning and construction are (1) improve the ability of communities and other high value assets that will survive a large, high-intensity wildfire with minimal fire suppression effort and (2) provide for improved citizen and firefighter safety.

Forest Health

Years of aggressive fire protection and timber management have dramatically changed the character of California's forests. Pre-European Sierra forests were open, park-like pine and fir forests that were subject to frequent low-intensity fires.

Current forests are smaller, younger, and more dense; they have high fuel loads and are prone to very intense fires. Developments have been superimposed in many of these forest types. The resulting fire problem, in critical fire weather periods, is a difficult control situation for any fire agency.

CDF resource management programs are aimed at keeping forest fuel values low enough that wildfire can be contained. Densities of dead and dying trees, understory vegetation and development must be managed. This includes advice to landowners on timber management, environmental protection, fuels treatments, prescribed fire treatments and development planning.

CDF is in the unique position to provide these services to forest landowners and communities. It also includes the proper treatment of stands during commercial timber harvesting. The Forest Practice Act and rules of the Board of Forestry have as their objective reducing the risks of wildfire costs and losses in timber harvest areas.

The objective is to service a large high-intensity wildfire without direct fire protection.

Prefire Management as Part of the Fire Plan

The prefire management initiative is a blend of existing CDF programs — fire prevention, land-use planning, vegetation management and forest health improvement, with risk assessment and systems analysis expertise. The initiative is being implemented in 1996 in the Nevada-Yuba-Placer, Tuolumne-Calaveras and Riverside ranger units. Beginning July 1, 1996, an additional 27 months will be required to expand the prefire management program to all 22 CDF ranger units and the six contract counties.

GIS maps will be provided for each asset at risk, with overlays showing level of service success and failure rates; hazards; asset values; and severe fire weather days by year. Each criterion will be summarized on the GIS maps and categorized for high, medium or low risk. After the risk areas are mapped, separate GIS maps will be generated that identify high-risk areas, for development of prefire management projects.

At the community level, representatives of all stakeholder groups for each asset at risk will be contacted and invited to a meeting. The purpose is to acquaint the stakeholders with the process and bring their expertise and knowledge to bear on the asset maps that identify risk levels. They will review the level of service that applies to the location of the assets. Areas where they find the level of service unacceptable will be identified on the hazard and risk maps for later use.

Ranger unit personnel will provide ground review and validation of the high-risk prefire management areas; maps will be corrected to reflect the need on the ground. New high-risk GIS maps will be generated for use in developing prefire management projects. Ranger unit staff will define prescriptions for prefire management projects that will reduce total costs and losses of a major fire burning through the area during a period of severe fire weather. Budgets will be developed for the projects.

The fire management projects will reduce total costs and losses of a major fire burning through the area during a period of severe fire weather.

Ranger unit staff, with assistance from region staff, headquarters staff and stakeholders with specific expertise, will identify economic and non-economic assets protected and estimated reductions in costs and losses if the prefire management projects are implemented. Ranger unit staffs, with assistance of region staff and headquarters staff, will identify the mix of state, federal and local government and prefire management projects will be ranked in priority, based on cost effectiveness and the priorities of the ranger unit chief.

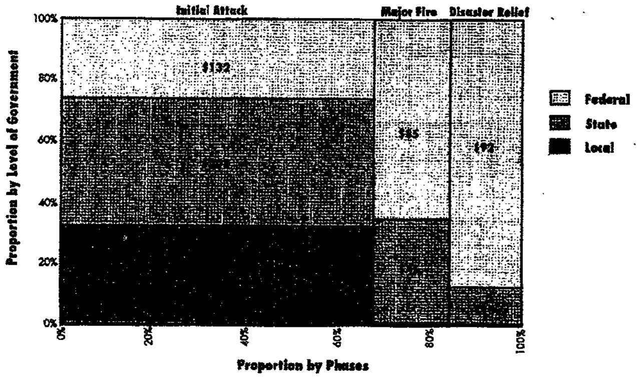
Additional meetings will be held with stakeholders when more than state funding is needed for the prefire management projects. Ranger units will then conduct community public hearings for the general public and stakeholders to review the assessment and proposed projects. After this final public input, the prefire management projects in the three ranger units will be aggregated at the state level for the budget change proposal and funding.

Final results of the fire plan process will be presented to the Board and monitored to use in adjustment of statewide policies.

Appendix A. Fiscal Framework Charts and Assumptions

Wildland Fire Protection Budgets by Level of Government by Fire Phase

	Millions of Dollars			
	Initial Attack	**Major Fire**	**Disaster Relief**	**Total**
USFS	$123	$77	$0	$200
BLM	6	4	0	10
NPS	1	3	0	4
BIA	2	1	0	3
FEMA	0	0	92	92
Other Federal	0	0	0	0
CDF	206	45	0	251
OES	2	0	0	2
Other State	0	0	13	13
	Initial Attack	**Major Fire**	**Disaster Relief**	**Total**
Total Federal	$132	$85	$92	$309
Total State	208	45	13	266
Total Local	170	1	1	172
Total	$510	$131	$106	$747



Explanation of Labels Used in the "Wildland Fire Protection Budgets" Chart

Wildland Fire Protection Budgets: includes all costs associated with wildland fire protection in California for local, state and federal government agencies.

Wildland: lands covered wholly or in part with flammable vegetation, requiring protection from fire and/or advancement of fire into areas containing other valued assets.

Fire Protection: all activities to protect wildland, and other assets at risk within wildland, from fire. This includes pre-suppression and disaster relief activities.

Fire Phases

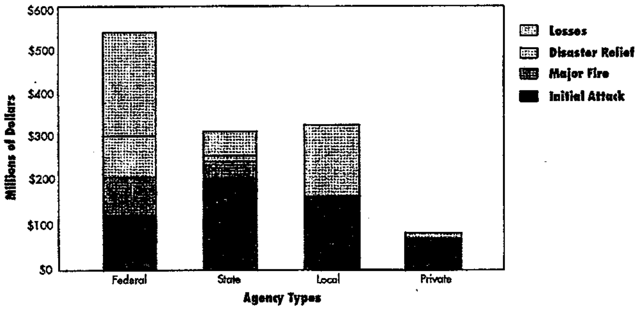
Initial Attack: includes all costs associated with pre-suppression and the control activities taken by resources on fires that are first to arrive at a wildland fire.

Major Fire: Includes all costs associated with control activities taken by resources on fires that are beyond the capabilities of the initial attack effort. For purposes of this chart, this includes the extended attack phase of a wildfire.

Disaster Relief: includes all costs to augment control efforts when a wildland fire has overwhelmed the capability of state and/or local governments to carry out the extensive emergency operations necessary to save lives and protect property.

Who Pays for Fire Protection Costs and Wildfire Damage

	Millions of Dollars				
	Initial Attack	**Major Fire**	**Disaster Relief**	**Losses**	**Total**
Federal	$132	$85	$92	$235	$544
State	208	45	13	54	320
Local	170	1	1	164	336
Private	66	0	0	14	80
Total	$576	$131	$106	$467	$1,280



Losses for federal agencies are estimates only due to insufficient data.

Explanation of Labels Used in the Suppression Costs and Losses Chart

Federal: includes all costs and losses associated with federal wildland fire protection and disaster management agencies in California. Generally this includes USFS, BLM, NPS, BIA and FEMA.

State: includes all costs and losses associated with state wildland fire protection and disaster management agencies in California. Generally, this includes CDF and OES.

Local: includes all costs and losses associated with local government fire protection and disaster management.

Private: includes costs and losses incurred by the private sector and not otherwise recovered from government assistance.

Fire Phases

Initial Attack: includes all costs associated with pre-suppression and the control activities taken by resources on fires that are fires to arrive at a wildland fire.

Major Fire: includes all costs associated with control activities taken by resources on fires that are beyond the capabilities of the initial attack effort. For purposes of this chart, this includes the extended attack phase of a wildfire.

Disaster Relief: includes all costs to augment control efforts when a wildland fire has overwhelmed the capability of state and/or local governments to carry out the extensive emergency operations necessary to save lives and protect property.

Appendix B. Level of Service Rating and Process

Background

The California Department of Forestry and Fire Protection (CDF) is a statewide resource protection agency. It is the largest multipurpose fire protection agency in the United States. CDF is directly responsible for wildland fire protection of over 31 million acres of California's privately owned watershed lands. In addition, the department provides full fire service protection to nearly 11 million acres under reimbursement agreements with local governments. The department responds to over 7,000 wildland vegetation fires on state responsibility areas each year. Approximately 95 percent of these fires are contained at less than 10 acres.

The heart of CDF's fire protection program is an aggressive initial attack firefighting strategy. CDF commands a force of approximately 3,800 full-time fire professionals, foresters, and administrative employees; 1,400 seasonal personnel; 5,500 local government volunteer firefighters; 2,600 Volunteers in Prevention; and 3,800 inmates and wards. All of these people work aggressively to prevent and suppress wildfires.

CDF operates 1,027 fire engines, (338 state-funded engines and 689 local government funded engines), 103 rescue squads, 12 aerial trucks, 58 bulldozer units, 5 mobile communication centers and 11 mobile kitchen units. CDF also funds 82 engines and 12 bulldozers used to protect state responsibility areas in Los Angeles, Orange, Santa Barbara, Ventura, Kern and Marin counties. In addition to its ground attack capability, CDF maintains a significant fleet of aircraft that includes seventeen 800-gallon air tankers, one 3,000-gallon and two 2,000-gallon contract air tankers, 13 air attack planes, and 10 helicopters.

CDF doesn't fight fire alone. The department cooperates fully with federal and local government firefighting agencies and the governor's Office of Emergency Services. This cooperation is formally defined and authorized in interagency agreements with the federal agencies, in the State Master Mutual Aid Agreement, and in local mutual aid agreements. The department advocates and uses the Incident Command System to efficiently manage the diverse resources used in the firefighting effort.

Level of Service Rating

The legislature has charged the Board of Forestry and CDF with delivering a fire protection system that provides an equal level of protection to lands of similar type (PRC 4130). To do this, the department needs an analysis process that will define a level of service rating that can be applied to the wildland areas in California to compare the level of fire protection being provided. The rating should be expressed as the percentage of fires that are successfully attacked. Success is defined as those fires that are controlled before unacceptable damage and cost are incurred.

California has a complex fire environment, with multiple climates, diverse topography and many complex vegetation communities. CDF data on assets at risk to damage from wildfire is incomplete. These factors combine to make it very difficult to develop a true performance-based fire protection planning system. CDF has resorted to prescription-based fire protection planning (travel times of firefighting resources to incidents, report times for the detection system, the same acreage goal statewide, etc.) as a way to overcome the complexity of the issues. Prescription-based planning is possible but tends to oversimplify some issues. Prescription standards also make it difficult to integrate the interrelationships of various fire protection programs, such as the value of fuel-reduction programs to reducing the level of fire protection effort required.

The following approximation method is proposed to overcome these shortcomings and allow CDF to proceed with a damage-plus-cost analysis of fire protection performance. This is a relative system, attempting to measure the relative impact of fire on the various assets at risk. At the same time, this process produces a level of service rating (LOS). The rating can be used to describe fire protection services to "civilians."

The level of service rating (the score of successes in initial attacks) can be used to compare one area of the state with another, recognizing that the assets at risk may be quite different. This gives CDF a powerful tool for setting program priorities and defining the benefits of the programs. The level of service rating also provides a way to integrate the contribution of various program components (fire prevention, fuels management, engineering and suppression) toward the goal of keeping damage and cost within acceptable limits.

The level of service rating used in this plan is expressed as the percentage of incidents where initial attack effort succeeds. Successful initial attack is defined in terms of the amount of resources needed to suppress the fire and of fire intensity. It is that effort which contains the fire within an acceptable level of resource commitment, acceptable suppression cost and minimal damage to assets at risk.

$$\frac{\text{number of successful initial attacks}}{(\text{total number of initial attacks})}$$

A matrix is used to define and display successful initial attacks in this framework. The matrix axes defines fire sizes and intensities. The body of the matrix contains the fire activity workload for the fire management analysis zone.

The general matrix has five columns for fires of different sizes and three rows for different intensity levels. The actual size classes and intensity levels are defined for regions of similar vegetation. The dark shaded portion of the matrix indicates fires that would be expected to exceed budget (and some emergency fund) protection. The lightly shaded portion indicates successful initial attack suppression, fires that are normally contained within allowable suppression cost.

Intensity	**Spots**	**Small**	**Medium**	**Large**	**Exceed model simulation limits**
Low					▨
Medium				▨	▨
High			▨	▨	▨

In this matrix, the lightly shaded area represents fires that are successfully attacked and the dark shaded area represents the unsuccessful initial attacks. This designation of successful and unsuccessful matrix cells would remain the same for all fire management analysis zone (FMAZ) matrices.

Average annual fire activity in the FMAZ is entered into the matrix according to intensity and size of the fires. A ranger unit's fire reports are sorted and tallied by size, intensity and FMAZ. Data from 1985-1994 is used to calculate a 10-year average of fire activity. This workload is then used as a calibration measurement for the California Fire Economics Simulator-Initial Attack Model (CFES-IAM). The modeled results, after calibration, are entered into the matrix and used to calculate the current level of service. Modeled results are used so analysts can maintain consistency with results during later analysis of system changes.

For example, suppose one ranger unit's FMAZ modeled workload looked like this:

Intensity	**Spots (0 - .25)**	**Small (.25 - 5)**	**Medium (5 - 25)**	**Large (25 - 300)**	**Exceed model simulation limits (+ 300 acres)**
Low	19	5	2	0	0
Medium	18	9	3	3	0
High	16	8	5	3	3

The level of service rating is the proportion of successful initial attacks to total initial attack workload.

$$\frac{\text{number of initial attack successes}}{\text{(total initial attack workload)}}$$

In this example, the annual average fire activity totals 90, with 80 fires in the successful initial attack portion of the matrix. This produces an 89 percent level of service rating (LOS).

$$\frac{\text{number of initial attack successes}}{\text{(total initial attack workload)}} = \frac{80}{90} = \text{89 percent LOS}$$

The score of 89 percent would be used to describe the level of service. It could be compared to scores from other fire management analysis zones in various systems for setting priorities.

By the fall of 1998, the LOS procedure will produce a numeric score of the level of wildland fire protection service with the following characteristics:

- ○ The score can be used to compare service levels in similar vegetation areas in California to help identify areas that are not receiving an equal level of service to lands of similar type.
- ○ The score can be used to compare service levels in different vegetation areas in California to help set priorities for prefire management project funding.
- ○ The process can discern which level of government is providing the service.

Additionally, when presented in different formats, the LOS rating can help explain CDF's initial attack fire protection system.

- ○ Scores can be used to compare CDF's abilities from one FMAZ to another.
- ○ The FMAZ can be mapped and colored or shaded to show levels of service.
- ○ Scores can be used to help identify areas needing additional prefire management program attention.

The contents of the matrices within a ranger unit can be combined graphically to show the composite workload within the unit.

LOS Rating Process

Areas, Maps and Models

The first step is to define regional areas of similar vegetation types in California. These zones are areas within an administrative (ranger) unit that have generally similar fire behavior and fire effects characteristics. The mapping process will use previously planned response areas as the basic mapping unit. This will ease later integration of the fire plan into operational procedures.

The next step is to define a matrix for the appropriate level of service for the regional vegetation zone. The fire size side of the matrix will be defined through interviews with the region's involved fire managers. The fire intensity side will be defined through an analysis of historic weather data for the zone. The LOS matrix is used to define inputs into the CFES model within each ranger unit.

The California Fire Economics Simulator-Initial Attack Model (CFES-IAM) is then used to model a ranger unit's fire workload. The results are used to calculate the current level of service in each fire management analysis zone in the ranger unit. Modeled results are used so analysts can maintain consistency with results during later analysis of system changes.

CFES-IAM also can be used to calculate the level of service by funding source. Ranger unit, regional and state-level maps can be generated depicting the total level of service and the level of service by funding source. The state-funded LOS map would be used to evaluate CDF's ability to provide an equal level of service to lands of similar type without consideration of other available local or federal firefighting resources.

An LOS rating map would be used as an input in defining areas of the state with high value, high hazard, frequent severe fire weather and low service levels. Ratings can be displayed in different formats to explain CDF's initial attack fire protection system.

- ○ The LOS scores can be used to compare CDF's abilities from one area to another.
- ○ The areas can be colored or shaded to show levels of service on a map.
- ○ The LOS scores can be used to help identify those areas that need additional prefire management program attention.

The level of service rating as defined above uses history to validate the modeling system. The modeled system (CFES) includes the efforts of CDF, any other state-level efforts, local government and federal government efforts. As a calibration step, this balances fire growth modeling vs. production function modeling in the simulator.

The local and federal resources can be removed from the CFES model for a "what if" analysis of the state-funded system. The CFES program will "refight" historic fires as if only CDF resources were available. The result will rate the state-funded response capability. This rating can be used to compare state response capabilities in lands of similar type.

As per the Public Resources Code (PRC 4130), the Board of Forestry is to provide *an equal level of protection to lands of similar type.* Key questions are: What is the state-funded level of service? Are the levels equal on lands of similar type? This portion of the process defines a method for addressing that issue.

The Matrix's Fire Intensity Axis

CDF chose to use three intensity levels to provide consistency with operational procedures. The department uses three levels to define the potential fire workload expected on initial attack fires. The levels are an integral part of a complex response system, used to determine the correct amount of resources to dispatch for an initial attack. Staying with three intensity levels will facilitate integrating the strategic plan with tactical operational plans.

Current research indicates that fire intensity is an important element for estimating fire effects. (Many other parameters, such as duration of burning, flame length and consumption, also relate to damage.) The fire intensity axis of the matrix should capture the most important indicator for damage to the area in question.

As a practical matter, measurements of fire intensity are limited. The fire behavior portion of CFES uses the National Fire Danger Rating System modeling process. NFDRS produces four primary fire behavior parameters:

- ○ **Ignition:** This component captures the factors that relate to ease of ignition of the fuel bed; generally, these are fine fuel moisture and temperature. The ignition component may work as a predictor of fire activity but, once a fire starts, isn't the best indicator for damage.
- ○ **Spread:** This component covers factors — chiefly wind, along with fine fuel moisture — that affect how fast the fire burns. This can be a good indicator of

damage in "light fuel" vegetation types like rangeland but not in broad conditions.

- ○ **Energy release:** This is the energy released from the fuel bed as the fire actively burns through it (the smoldering stage doesn't count). It is heavily affected by fuel moisture, especially from living plants and large dead ones; it is not affected by wind speed. Usually a very good indicator of damage in "heavy fuel" vegetation types like forested areas.
- ○ **Burning index:** This combines the energy released and the rate of spread, and is designed to relate well to flame length. The index can be a very good indicator of damage in "medium fuel" vegetation types like woodland areas. It can also work well in brush and chaparral.

Other NFDRS components and indexes incorporate fire workload (human occurrence, lightning occurrence and fire load indexes) and thus cloud the issue a little. The level of service rating process brings in workload later. The appropriate component for describing fire behavior in the vegetation type will be selected by the fire plan analysis team.

Intensity Analysis

Grouping FMAZs by similar vegetation and fuel types will provide more data matches on weather and fire reports for statistical analysis. There is much data to be collected and correlated.

Select appropriate weather stations: State and national fire managers have used the National Fire Danger Rating System (NFDRS) to collect weather data for over 20 years, first through AFFIRMS and now WIMS software programs. The data is stored in the National Fire Weather Data Library, in the National Computer Center, in Kansas City. It has been designed, recorded, formatted and saved specifically for historical analysis. More than 475 historic and active California weather stations are in this data set. Many of them may not have weather records for the 1985-94 analysis period; 118 of them do.

CDF also has data from about 200 remote, automated weather stations. It is formatted as hourly data and is not ready to be processed through the NFDRS historic analysis programs. This formatting can be done on selected stations to fill voids in the NFDRS weather station data set, but it will take some time.

Calculate fire danger indexes: These indexes can be calculated given the weather data for the FMAZ, the fuel type, slope class, climate and herbaceous vegetation type. The danger rating processor produces a data file of daily fire danger indexes. These indexes can then be linked to the fires that occurred in the area on each day.

Collect fire activity data: Fire activity data for 1985-94 is available for most zones. It covers the incident number, report date and time, arrival date and time, containment date and time, cause, size and location. The location information is based on public land survey data (section, township, range information). The public land survey can be converted to latitude and longitude with an acceptable level of accuracy (center of section); that allows a geographic information system to link fire reports to the appropriate fire management analysis zone.

Collect fire cost data: California's CALSTARS accounting database system has millions of spending records that can be tied to the originating incident and grouped by category. These cost totals can then be related to incident records in the fire activity database.

Merge fire report data with fire danger indexes: There are two ways to link the weather and fire reports. Both linkages will need to be performed for different portions of analysis.

○ The data can be linked by weather day. Each record in the data set is a day with weather readings and fire intensity indexes. Fire business is summarized and linked as a yes/no condition. Typical fire business queries are: Did a fire occur on this day? yes/no. Did a large fire occur? yes/no. Was some level of expenditure exceeded? yes/no. This linkage can be used to establish the predictive quality of the index and to set operational decision points. It also can be used to validate the fuel model and weather station selection. A further discussion of this analysis is part of the section describing the intensity axis of the matrix.

○ The data can be linked by fire report. The fire intensity index for the day is attached to the fire report record. The same intensity level would be used many times if there were multiple fires on a day. This linkage will provide for the analysis of historic fire activity for the CFES-IAM model.

Compare indexes with fire business: The next step is to define the appropriate intensity level groups — low, medium and high fire intensity. The analysis effort will aim at finding the index, fuel model and/or weather station that best discriminates the types of fire business. Fire business is correlated with the intensity rating as:

○ Low — little to no fire larger than the "spot size" in this index range

○ Medium — some fire activity but no (or little) history of large or major fires in this index range

○ High — history of large fires in this index range

Break points in the intensity level group can be determined by plotting the cumulative frequency distribution curves for all days, fire days, medium-size fire days and large fire days. Fire day definitions are:

○ All days — any day with fire weather readings, regardless of fire business

○ Fire day — a day with a fire, regardless of size

○ Medium-size fire day — a day with a fire larger than "spot" size

○ Large fire day — a day with a fire in the "large" or "major" size class

The break points can be found by plotting the distributions and finding the index level where medium-size fire days begin to show up and where large and major fire days begin to show up.

Combine intensity analysis: The intensity analysis will be done at the FMAZ level. The next step is to compare the intensity break points between similar FMAZs and calibrate them so that a single set of break points can be used for the similar FMAZs. This step will allow comparison of level of service ratings among similar FMAZs.

The Matrix's Fire Size Axis

The fire size classes along the horizontal axis of the matrix reflect the general cost of fighting the fires. They also indicate the general impact on suppression organizations by the extent of resources they tie up and how long the resources are used. These impacts should be similar between fire management analysis zones of the same fuel type but can vary among zones of different fuel types.

Impacts on the initial attack suppression organization are an important element in planning. The matrix allows for a general grouping of fires along the horizontal axis in three size classes representing minimal resource commitment, extended time commitments and major resource commitment.

Small fires (up to a quarter acre or so) are those that have to be extinguished but don't require a significant resource commitment. This size class includes fires that don't spread, are suppressed by local citizens, or are otherwise not a problem.

The middle size classes define the small to medium fires that are modeled in the CFES-IAM initial attack simulator. These classes are used to reflect changes in initial attack strategy and use of tactical resources that affect the suppression system.

The last size class indicates the point at which the CFES-IAM initial attack model breaks down, where continuous fuel, weather and slope factors exceed the basic modeling assumptions for those components. This size can vary among FMAZs, subject to regional conditions.

Another important use of the size class breakdown is to provide categories of fires for assessing damage to assets at risk. One common definition of the matrix within similar FMAZs will allow different assets to be combined into a composite matrix and the matrices to be compared from one administrative unit to the next.

Defining Size Classes

Representatives from the field units responsible for fire protection in the FMAZs should be brought together for a structured interview session to define the acreage break points. Interview team members should represent each unit in question and include a mix of unit chiefs, operations officers, battalion chiefs, administrative officers, air attack officers and others knowledgeable in firefighting in the unit.

The interview team would review the FMAZs in question by examining photographs, maps and fire history data. The unit representative would be asked a series of questions:

○ What acreage would account for most of the "non-serious" initial attack fires?

○ What acreage accounts for routine initial attack with a short duration impact on initial attack drawdown?

○ What acreage represents an upper limit of initial attack and the beginning point for extended drawdown, verging into extended attack?

○ What acreage would describe the point where modeling assumptions of continuous slope, fuel and weather no longer are valid?

Team members would answer these questions individually without discussion. The answers would be tabulated and the team, as a group, would discuss them and agree on an acceptable single answer for each question for each FMAZ.

Defining the System Failure Threshold

System success is defined as fires that are managed without either adversely affecting the initial attack system's ability to respond to other incidents or expending significant unallocated resources (emergency fund). CDF's budget structure generally provides that initial attack activities be funded out of an allocated budget. The emergency fund exists to pay for managing wildland fires that escape initial attack. Consequently, fiscal data should show an acreage threshold that indicates significant impacts on the emergency fund.

The field team will evaluate the failure threshold by comparing the emergency fund costs by incident acreage and intensity level to establish the acreage threshold for system failures. The threshold can be defined as the point where significant e-fund expenditures begin. This will be reflected in the acreage side of the level of service rating matrix.

Multiple Major Incident Capability

CDF's wildland fire protection system is based on a strategic concept of initial attack success. Initial attack failures are not only costly, but they also drain suppression resources from readiness and increase the possibility of more initial attack failures. Sufficient resources must be available to meet the workload demands of initial attack failures, the so-called "major fires." The ability to staff and equip major incidents and still retain some initial attack effectiveness is called "depth of resources." As a concept, depth of resources includes all suppression capabilities, from engines and people to financial flexibility, needed for incident management.

A depth of resources analysis is contained in the 1985 Fire Plan, Section 7270. The fire plan field team should review and refresh this analysis. Future generations of the fire plan may be able to refine this methodology.

The Fire Plan Field Team

A field team will be assembled to visit the ranger units; explain the planning process; review and validate prior field work on defining fire management analysis zones, representative fire locations, resource travel times, production rates, etc.; conduct acreage interviews; and otherwise assemble the information needed to complete the fire plan. The team will update field fire planning software and data files as necessary, and will train unit CFES coordinators on the latest version of CFES, other planning software and the fire plan framework and methodology. The team will also visit administrative units to complete those tasks.

A variety of roles and talents will be needed. The team should be led by a SFR IV or CDF administrator-level employee. Members should include people knowledgeable in fuels modeling, vegetation typing, firefighting strategies and tactics, local government and federal resources, statistical analysis, the CFES-IAM software program, and the fire plan framework and process.

A staff paper by the Level of Service Task Group, Fire Plan Working Team: Jerry Geissler, Hank Weston, Wayne Mitchell, Larry Benson, Steve Peterson, Greg Greenwood

April 6, 1995

Appendix C. Assets at Risk and their Role in the Fire Plan

Introduction

The primary goal of fire protection in California is to safeguard the wide range of assets found across wildland areas. These assets include range, life and safety, timber, recreation, water and watershed, air quality, cultural and historic resources, unique scenic areas, life and safety, structures, wildlife, plants, and ecosystem health. This appendix to the fire plan describes these assets and discusses approaches to assessing their economic and non-commodity values. It also addresses how estimates of these asset values will be used in the fire plan process.

Knowledge of the types and magnitudes of assets at risk to wildfire, as well as their locations, is critical to fire protection planning. Given the limits on fire protection resources, these resources should be allocated, in part, based on the magnitude of the assets. At the margin, knowledge of assets at risk is also necessary to choose those prefire management projects which will provide the greatest benefit for a given amount of investment. For the department, the primary concern regarding prefire projects is the reduction of suppression costs; of secondary concern is reducing the fire risk faced by the various assets described here.

Thus, as a part of the overall fire plan process, assets will be addressed at two levels. First, generalized assets at risk will be estimated and summed across the state to indicate what areas contain highly valued assets. These assets will be overlain with a measure of likelihood of occurrence of a large damaging fire. These statewide assessments will be refined at the ranger unit level through a process that includes the participation of stakeholders in the various assets. Those areas with the highest combined asset values and fire risk will be targeted for prefire management projects, particularly where those projects would significantly reduce suppression costs should a fire start in the project area during high fire hazard weather. Second, as potential projects are identified in these areas, they will be subjected to an analysis of the degree to which the projects will reduce potential suppression costs and damage to assets.

The process of explicitly enumerating assets at risk also helps to identify who benefits from those assets. It is a premise of the fire plan that those who benefit from the protection of an asset should pay for that protection. Thus, asset stakeholders will be expected to provide financial support for those projects that provide significant benefits to their assets of concern while providing little potential for reducing suppression costs. For example, if a prefire management project primarily protects structures, local government and the affected homeowners should provide the primary financial support for the project. On the other hand, if a project primarily benefits wildlife in general, then the Department of Fish and Game, the U.S. Fish and Wildlife Service and/or a wildlife interest group should bear the major costs of the project.

The first, and major, part of this appendix addresses two basic questions: What is the value of the resources or assets at risk to wildfire? What asset losses (economic and non-economic) result from wildfire? Where possible, estimates of asset values were made on a dollar-per-acre basis. The methodologies used, although exposed to some peer review, need further review and refinement. This will be done at the state level and as a part of the pilot projects in three ranger units.

Table 1 summarizes the assets at risk framework that has been developed for estimating fire impacts. Resource assets presented here include life and safety, air quality, range, recreation on public wildlands, structures, timber, water and watersheds, wildlife and habitat, cultural and historic resources, and unique scenic areas. No attempt has been made to make economic estimates of the value of human loss of life or injury, although there are methodologies for estimating such values.

Table 1. Assets at Risk Framework Summary

Resource	Asset Value Basis	Level of Disaggregation	Levels of Value*	Strength of Methodology
Life and safety	Non-economic values are not quantified	By population density	National, state and local	High
Air quality	Average dollar impact from particulate matter (PM10) emitted per acre burned; non-commodity assets also exist	Air quality basins (13) and basic fuel types (2)	National, state and local	Low
Range	Dollar cost of replacement feed per acre of rangeland burned	Values by regions (8), cover types (9) and ownership classes (5)	State and local	High
Recreation on public wildlands	Average dollar loss per acre burned; non-commodity assets also exist	Statewide average by public ownership categories (5)	National, state and local	Low
Structures	Average dollar loss per home burned; non-commodity assets also exist	Statewide average	State and local	High
Timber	Average dollar loss per acre burned	Values by regions (6) and ownership categories (4)	National, state and local	High
Water and watersheds	Range of economic impacts per acre for value of increased water yields; cost of sediment removal; loss of reservoir capacity; effects on hydroelectric generation; costs of watershed rehabilitation; non-commodity assets also exist	Statewide ranges of economic impacts	National, state and local	Low to medium
Wildlife, habitat, plants and ecosystem health	Qualitative discussion of the tradeoffs in fire impacts	Statewide	State and local	Low
Other resource assets, cultural and historic resources, unique scenic areas	These non-commodity assets cannot be quantified adequately; descriptive enumeration only	Statewide (generically) or place-specific	National, state and local	Low to medium

*May or may not be cumulative.

For each of the resources, the table summarizes the value basis (i.e., the units in which fire impacts have been estimated) and the level of disaggregation (resource subtype and geographic area) of these assets. The table also indicates the levels, ranging from local to national, at which the resources are valued. The manner in which "consumers" of a particular resource value it may differ from local to state to national levels. Some of the resources protected from fire in California have value beyond national borders — for example, the scenic Lake Tahoe Basin or the old growth redwood parks of the North Coast. Again, it should be emphasized that the economic values that have been calculated are preliminary and are often highly aggregated. These estimates will be refined as fire plan implementation moves to the ranger unit level. CDF is working with the Department of Fish and Game, State Water Resources Control Board staff, Department of Water Resources, USDA Forest Service, Los Angeles Flood Control District, Pacific Gas & Electric Co. and the East Bay Municipal Utility District to refine our approaches to wildlife, plants, ecosystem health, watersheds and water.

The remainder of this appendix examines the manner in which generalized assets at risk will be summed across the state to identify those areas with the greatest total value of assets. These initial, coarse statewide assessments will be refined at the ranger unit level through a process that includes stakeholder participation. Finally, the appendix discusses the issue of how the costs of prefire management projects will be shared among those parties benefiting from them.

Air Quality

Introduction

Air quality is of particular importance in California, given our large urban populations and the state's topographic and meteorological characteristics, which often inhibit dispersion of air pollutants. This section examines economic values related to wildfire and air quality. Similar issues exist with respect to the air pollutants created by prescribed fires.

Suppression of wildfire provides a short-term benefit to air quality by reducing the amount of vegetative and woody material that would have burned if the fire were left unchecked. However, since fire is a natural part of California's wildland ecosystems, what we prevent from burning today may simply end up burning next year. Our success at fire suppression has resulted in a fuels buildup that contributes to the occurrence of large fires with their associated acute pollution events. Thus, our fire suppression system has in part replaced a natural background level of frequent light fires with less frequent, large, catastrophic fires. Further, large wildfires result in the burning of larger fuels that would be unlikely to burn under a natural fire regime, but instead would decompose. The result of these changes is likely to be higher net wildland fire smoke emission and the concentration of these emissions in space and time, relative to the more dispersed smoke emissions of the natural fire regime.

This report begins with a review of the mechanism of pollutant emission from wildfires and then examines the impact of such smoke emissions on a range of assets — visibility, human health, materials and vegetation, and pollutant rights. Finally, an overall estimate of marginal pollutant impact values is presented. Unlike for most of the other assets examined in this appendix, there is no meaningful way to describe the total value of the resources being protected from wildfire smoke emissions by wildfire suppression.

Fire Emission and Exposure Mechanisms

Wildland fires are categorized as an "area source" by air pollution agencies, since fires release pollutants over the area burned, rather than from a discrete "point source" such as a smokestack. There are many variables involved in determining the amount of various kinds of pollutants emitted in wildfire. These factors include fuel type and loading, moisture content, topography and weather. In general, flaming materials (such as would occur with dry vegetation or wood in daytime) produce fewer pollutants than smoldering materials (e.g., relatively moist material at night). Emissions from controlled burning are likely different than those from wildfire (Reinhardt et al. 1994).

The most prominent pollutants produced in wildfire are carbon monoxide (CO), nitrogen oxides (NOx), organic gases (OG), and suspended particulates (TSP). Of particular concern for human health are particulates smaller than 10 microns in size (PM10). Table 2 indicates Air Resources Board emission factors for wildfire. Although more research is needed, they are the best information available at this time. The USDA Forest Service recently developed a more sophisticated set of emission factors (USDA Forest Service 1995), which will be incorporated when they have been more fully documented.

Table 2. Emission Factors for Wildland Fires

	Grass and Woodland		Timber and Brush	
Pollutant	**lb/ton**	**lb/acre***	**lb/ton**	**lb/acre****
CO	101	202	260	3,900
NOx	0	0	4	60
OG	19	38	25	375
TSP	16	23	42	630

* assumes fuel load of 2 tons per acre
** assumes fuel load of 15 tons per acre
Source: California Air Resources Board

Table 3 shows the estimated total air pollutants emitted per year by CDF and USDA Forest Service wildfire[1], based on the factors presented in Table 2 and average annual acres burned from 1985-94. These numbers indicate that wildfire is responsible for the release of significant quantities of air pollutants, totaling an average of almost 600,000 tons per year.

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[1] *Does not include Bureau of Land Management, Bureau of Indian Affairs, National Park Service and wildfires inside city limits' acreage.*

Table 3. Estimated Annual Wildfire Air Pollutant Emission (1985-1994 average)

Pollutant	Grass and Woodland (tons of emissions)	Timber and Brush (tons of emissions)	Total (tons)
	CDF Fires		
CO	6,083	139,695	145,777
NOx	0	2,149	2,149
OG	1,144	13,432	14,576
TSP	693	22,566	23,259
Total	7,920	177,842	185,762
	USDA Forest Service Fires		
CO	4,457	319,125	323,583
NOx	0	4,910	4,910
OG	839	30,685	31,524
TSP	508	51,551	52,059
Total	5,803	406,271	412,075
	CDF and USDA Forest Service Fires		
CO	10,540	458,820	469,360
NOx	0	7,059	7,059
OG	1,983	44,117	46,100
TSP	1,200	74,117	75,317
TOTAL	13,723	584,113	597,836

Estimating the impacts of pollutants is difficult even for industrial point sources, since the sources and receptors are often distant from one another, with many intervening variables. For wildfire, the emission-to-impact chain of causation goes something like this. First, a fire occurs, emitting varying amounts of pollutants depending upon its size, the fuels burning, the moisture content of those fuels, topography, and meteorological conditions. Next, those pollutants are transported from the site of emission to potential receptors. The dosage of the pollutant (concentration and duration) received by the receptor will be strongly influenced by the transport distance and intervening meteorological factors. The actual impacts suffered by the receptor will depend upon susceptibility (e.g., for human receptors, age, asthma, chronic obstructive pulmonary disease, etc.).

Trying to attach economic value to the impacts of air pollutants is formidable. While some work has been done in this area, the results are limited and in many cases are difficult to translate to pollutants arising from wildfire.

Overall, the air quality impacts of smoke from wildland fire are important, especially given the fact that most air basins in the state are in non-attainment status for many pollutants, including those most closely associated with wildfire. According to RERI (1994) none of the state's 14 air basins were in attainment with state PM10 standards at the 1987 benchmark date; only half were in attainment with the weaker federal standard.

Resources Protected

Wildfire smoke emissions can affect visibility, human health, materials and vegetation, and pollutant rights. Each category is examined in turn. Finally, an overall estimate of marginal pollutant economic impacts is presented.

Visibility. Visibility relates to a person's ability to see objects in the distance and the manner in which pollutants decrease visibility. Air pollution can have significant, adverse impacts on the aesthetic assets of visibility (Chestnut et al. 1994). In the extreme, loss of visibility can affect public safety. The wildfire-related pollutant of greatest impact on visibility is particulate matter.

Analysts have defined two primary visibility categories, residential and recreational, with the former category providing the bulk of the related economic value (Chestnut et al. 1994). The values individuals place on improvements in visibility have generally been estimated through a survey method known as contingent valuation. While this method has its limitations, it provides the preponderance of the information available on the economic value of visibility.

Estimates of the value of visibility are usually based on a general improvement in air quality over the course of a year. It is not possible to translate these estimates into a value for loss of visibility for a single acute visibility impairing event such as a wildfire. Based on their own work and that of others, Chestnut et al. (1994) provide estimates of value for a 20 percent improvement in residential air quality. The estimate of value ranges from $112 per household per year to $224 per household per year, with $157 per household per year accepted as the central estimate (all figures are 1995 dollars).

For recreation assets, values for protecting visibility in parks is most often examined. Given the high level of outdoor recreation that occurs in California, and considering the presence of such unique and highly visited outdoor resources as Yosemite National Park and the Tahoe Basin, these assets, in aggregate, can be considerable. Individuals are expected to value not only the opportunity to enjoy good visibility during their own visits to parks, national forests, and other areas, but also the opportunity for others to enjoy that visibility now and in the future. Chestnut et al. (1994) found a total value of $16 per household per year for in-state residents and $9 per household per year for out-of-state residents for a 20 percent improvement in air quality (all figures are 1995 dollars). While these data indicate significant values for improvements in overall visibility in both residential and recreation areas, they cannot easily be translated to the acute visibility effects of wildfire.

Human Health Knowledge of the health effects of wildfire smoke emissions is limited. A recent study of effects of smoke exposure of prescribed burning workers recommended a health risk assessment to evaluate the likelihood of acute and chronic health effects of exposure (Reinhardt et al. 1994). These researchers conclude that the most significant pollutants for firefighter health include carbon monoxide, aldehydes, benzene, and respirable particulate. However, smoke exposure at large, intense wildfires is likely different than at prescribed fires, and different yet than the general public's exposure to smoke some distance from the fire itself. In terms of general public health considerations, respirable particulate matter appears to be the pollutant of greatest import.

Most of the particulate matter produced in wildland fire is respirable; that is, it is small enough to pass through the upper respiratory system and enter the lungs. Acute smoke impacts include eye, mucous membrane, and respiratory tract irritation, aggravation of chronic respiratory and cardiac disease, and reduced lung function (Reinhardt et al. 1994, RERI 1994). Although placed in a fairly innocuous category by OSHA, studies have shown wood smoke to have a high mutagenic and carcinogenic potential, and epidemiological studies have connected disease and adverse respiratory symptoms with particulate laden atmospheres (Reinhardt et al. 1984). However, the effects of chronic exposure to wood smoke over the long term remain uncertain.

Economic value of health impacts is most often measured by medical expenditures and lost wages. However, since this does not account for pain and suffering, such estimates represent at best a low bound economic estimate of health impacts (RERI 1994). These authors established a table of estimates for the economic value of health impacts (Table 4).

Table 4. Estimated Economic Impact of Health Effects (1995 dollars)

	Estimated Range of Impacts		
Impact	**Low**	**Medium**	**High**
Cough	$3.14	$7.32	$14.64
Headache	3.14	7.32	14.64
Eye Irritation	3.14	7.32	14.64
Chest Discomfort	3.14	7.32	14.64
ARD	3.14	7.32	14.64
TRRAD	23.54	48.64	73.74
MRAD	14.64	23.54	40.27
Asthma Attack	11.51	33.47	55.44

ARD = any respiratory disease days
TRRAD = total respiratory related restricted activity days
MRAD = minor restricted activity days
Source: RERI 1994.

Where air pollution causes death, placing an economic value on that loss is generally done through a "value of a statistical life" approach. RERI (1994), based on a comprehensive review of the literature and considerations of various factors, accepted a mid-range value of $4.2 million dollars for the value of a statistical life.

While these health and associated economic impact data are enlightening, they are of limited use since there are no functional relationship data available to link wildfire occurrence to the resulting levels of health impacts. Thus, we have no ability to calculate overall economic impacts.

Materials. Damage to materials from exposure to the smoke of wildland fires is related to the effects of particulate matter in soiling and discoloring structural metals, fabrics, and building materials (RERI 1994). Dose-response estimates for materials damage have been fraught with much uncertainty, making it difficult to estimate the economic impacts of smoke from wildfire. However, RERI (1994) has estimated that a one-unit reduction in PM10 (in micrograms per cubic meter) results in $3.13 (1995 dollars) benefit in saved cleaning costs per household. This estimate cannot be conveniently translated into the wildfire situation, however, since it is a measure of the benefits resulting from a change in average annual PM10 levels, not the acute, short term changes that might be associated with a wildfire.

Vegetation. Air pollution damage to vegetation, including timber, is primarily related to ozone and sulfur dioxide exposure (RERI 1994). Since these are not major components in the smoke of wildland fires, it appears that vegetation is little affected by the smoke of such fires and need be considered no further in this analysis.

Pollution Rights. In recent years, air quality regulators have moved in part to use market approaches to allocating among industrial polluters the atmosphere's limited capacity to absorb air pollutants. As a part of this approach, regulators in some air basins now allow polluters to buy and sell rights to emit specified quantities of pollutants within a given airshed. These approaches can achieve more economically efficient pollution control results than systems based on technological controls alone (Tietenberg 1985).

The Air Resources Board monitors the prices paid in exchanges of pollution rights in California air basins. Among the pollution rights traded, particulate matter is the one most relevant for wildfire. In 1993, rights for emission of approximately 45 tons per year of PM were exchanged, with prices ranging from $10,000 to $25,000 per ton per year and averaging $19,123 per ton per year (Air Resources Board 1994). PM had the highest average ton/year value of the four criteria pollutants examined in the report.

These pollution rights represent a perpetual right to emit the given quantity of pollution each year. If we annualize this value, using a 7.5 percent real discount rate, the average $19,123 per ton per year perpetual pollution emission value has an annualized value of $1,434 per ton per year.

Referring to the emission factor information presented in Table 2, grass and woodland fires emit 23 pounds of particulate matter per acre burned and timber and brush fires emit 630 pounds. Thus, if we assume that a change in wildfire emissions creates a similar value as PM pollution rights, we can estimate the economic impacts of a marginal increase or reduction in a given year's wildfire PM emissions, based on the change in number of acres burned. For grass and woodland, the value would be $16 per acre per year and for timber and brush, the value would be $452 per acre per year. Since one generally would not burn the same piece of ground more than once in a year, we can functionally cancel out the per-year unit of these variables and assume that the air pollution right cost of burning an acre is $16 for grass and woodland and $452 for timber and brush.

These values must be used carefully, however. First, not all air basins have a market in PM pollution rights, thus there would be no pollution right value for PM in such basins. In 1993, there were PM rights transactions in only three air basins, the San Francisco Bay Area, Sacramento Metropolitan, and the South Coast.

However, the fact that most air basins are non-attainment for PM suggests that there may be other areas where a pollution rights value could be ascribed to wildfire PM emissions.

Looking at the Bay Area air basin, in 1992, 4,121 acres of grass and woodland and 320 acres of timber and brush burned on CDF-DPA. Using the data above, these fires emitted an estimated 148 tons of PM, with a value of approximately $211,000. In the South Coast air basin in 1992, 3,782 acres of grass and woodland and 9,601 acres of timber and brush burned on CDF-DPA. Thus, these fires emitted an estimated 3,068 tons of PM with a value of approximately $4.4 million. Totaling for these two air basins with active PM pollution rights markets, the value of wildfire smoke emissions in 1992 was approximately $4.6 million.

Greenhouse Gases. Carbon is an important contributor to the greenhouse effect. The California Energy Commission (1995) estimates an externality impact of $36 per ton (1995 dollars) for carbon emissions. Converting this value to CO emissions yields an externality impact of $15.43 per ton of CO. One could use the emission factors in Table 2 to calculate a carbon impact value for wildland fire (the results would be $1.56 per acre of grass or woodland burned and $30.09 per acre of timber or brush burned). However, the impact value for carbon is calculated on the basis of fossil fuel combustion and assumes that the carbon released to the atmosphere will not be directly re-sequestered. Since the carbon released in a wildland fire will eventually be re-sequestered in vegetative regrowth on the same site, it seems more appropriate to view the release of carbon from wildland fire as a short-term impact that does not contribute to long-term accumulation of greenhouse gasses. Therefore, it is the recommendation of this plan that carbon impact values not be calculated for wildland fire, whether the fire is prescribed or not.

Table 5. Overall Marginal Pollution Impact Values for PM10 (1995 dollars)

				Including Pollution Right Value	
Air Basin	**Marginal Emission Value ($/ton)**	**Grass and Woodland ($/acre)**	**Timber and Brush ($/acre)**	**Grass and Woodland ($/acre)**	**Timber and Brush ($/acre)**
San Francisco Bay Area	24,258	279	7,641	295	8,093
South Central Coast	6,441	74	2,029	74*	2,029*
South Coast	46,458	534	14,634	550	15,086
San Diego	24,593	283	7,747	283*	7,747*
Sacramento Valley	2,935	34	925	50	1,377
Southeast Desert	708	8	223	88*	223*
San Joaquin Valley	5,184	60	1,633	60*	1,633*
North Central Coast	6,441	74	2,029	74*	2,029*
North Coast	1,703	20	536	20*	536*
Great Basin Valley	125	1	39	1*	39*
Northeast Plateau	395	5	124	5*	124*
Lake Tahoe	924	11	291	11*	291*
Lake County	908	10	286	10*	286*
Unweighted Average	9,313	107	2,934	111	3,038

* indicates assumed PM10 pollution right value is zero.
Sources: California Energy Commission 1993, 1995; Air Resources Board 1994.

Rangeland

Introduction

California's 82,470,000 acres of rangeland are a critical part of the productive base of the range livestock industry in the state (CH2MHILL 1989). This rangeland crosses a wide spectrum of vegetation cover types, from desert, to annual grasslands, to chaparral, to oak woodlands, to conifer forest. Of this area, an estimated 30,000,000 acres are actually grazed. Total annual revenue produced by the range livestock industry is in the vicinity of $1 billion (Tippet, pers. comm., 1995).

This report examines the value of the forage provided by rangelands and the loss to the rangeland owner or lessee when grazed lands burn in wildfires. When rangeland burns, assets other than forage may be affected as well, such as wildlife habitat, water quality, and air quality. These impacts are addressed in other asset sections.

Value of Forage Production from Grazed Lands

Using a market value approach, the value of forage production from grazed lands in the state can be measured by the fees paid by the livestock industry to graze these lands. CH2MHILL (1989) presents data on grazed acreage, carrying capacity, and grazing fees. Table 6, below, presents the annual value of grazing in the state, based on the data in CH2MHILL, with adjustment of grazing fees to 1995 dollars. Table 7 presents a key to the abbreviations for the cover type and ownership categories found in Table 6.

As indicated in Table 6, the annual value of grazing in the state is approximately $138 million per year. Thus, forage value represents about 13 percent of the total value of the range livestock industry's annual output. Regionally, the highest grazing value is found in the San Joaquin Valley ($54.1 million per year) and the lowest on the East Side ($1.9 million per year).

Table 6. Annual Value of Grazing in California (in dollars)

Cover Type and Ownership	North Coast	Northern Interior	Sacramento Valley	Central Sierra	Central Coast	San Joaquin Valley	East Side	South Coast	Total
CHP.BLM	$287	$2,851	$861	$837	$8,530	$3,230	$0	$10,269	$26,864
CHP.OP	118	1,994	1,827	130	357,576	1,788	26	7,861	371,320
CHP.PVTL	40,271	105,477	46,598	10,625	42,920	2,890	0	1,661	250,442
CHP.PVT	375,189	272,996	362,239	327,373	4,434,287	317,815	3,190	1,556,428	7,649,517
CHP.FS	120	10,663	7,749	4,143	59,668	8,457	4,243	27,408	122,451
WET.BLM	0	1,848	0	0	0	0	25,694	122	27,664
WET.OP	2,082	11,841	567	572	19,988	4,202	1,002	390	40,644
WET.PVTL	15,573	37,817	0	16,955	0	0	0	0	70,345
WET.PVT	109,043	425,525	993,443	67,792	238,308	2,494,474	450,983	36,660	4,816,227
WET.FS	0	23,226	6,393	2,902	0	5,691	2,772	1,009	41,994
OAK.BLM	2,630	4,914	3,193	3,542	17,196	55,466	0	385	87,326
OAK.OP	37	1,073	46,276	92	342,343	19,284	0	385	409,491
OAK.PVTL	464,668	44,794	43,610	0	146,090	116,821	0	0	815,983
OAK.PVT	1,972,610	2,305,505	4,129,931	2,668,246	11,786,387	15,706,696	0	87,515	38,656,891
OAK.FS	7,110	18,966	14,622	22,534	7,382	118,562	0	13,089	202,264
AGR.BLM	3,708	3,695	2,027	1,877	24,540	58,304	0	33,238	127,390
AGR.OP	1,397	3,934	167,751	350	796,479	11,454	0	5,709	987,075
AGR.PVTL	486,071	117,787	36,167	33,004	109,961	36,820	0	4,643	824,453
AGR.PVT	5,910,289	1,523,383	6,184,303	3,867,689	16,908,744	33,474,897	0	1,799,509	69,668,816
AGR.FS	1,370	43,226	1,155	585	0	15,565	0	2,757	64,658
PGR.OP	813	0	0	0	0	0	0	0	813
PGR.PVTL	0	0	0	0	0	0	0	0	0
PGR.PVT	301,093	0	0	0	0	0	0	0	301,093
PGR.FS	$0	$2,985	$4,788	$231	$0	$0	$674	$0	$8,677
CON.BLM	1,476	6,573	312	694	363	2,313	220	410	12,361
CON.OP	64	3,489	306	141	13,146	3,512	1,026	220	21,904
CON.PVTL	784,982	997,955	297,415	190,882	43,652	21,387	0	1,531	2,337,805
CON.PVT	866,705	457,732	205,487	289,489	385,166	317,253	12,976	47,508	2,582,316
CON.FS	6,798	142,115	68,172	44,199	19,638	43,361	45,552	12,450	382,287
SAG.BLM	0	176,071	358	15	0	11,697	56,819	4,486	249,444
SAG.OP	0	24,833	100	0	0	717	207,344	772	233,766
SAG.PVTL	0	162,014	7,601	0	0	3,375	0	0	172,991
SAG.PVT	0	3,021,696	184,965	6,206	13,263	759,413	611,959	3,764	4,601,266
SAG.FS	0	75,699	8,160	147	0	5,719	47,053	0	136,778
JUN.BLM	0	21,723	525	0	0	6,024	9,788	11,344	49,404
JUN.OP	0	1,968	118	0	0	71	16,095	55	18,308
JUN.PVTL	0	48,580	0	0	0	0	0	1,544	50,123
JUN.PVT	0	378,667	25,746	0	4,636	128,636	56,476	92,185	686,347
JUN.FS	0	49,560	801	0	29	2,546	18,294	1,169	72,399
DES.BLM	0	0	0	0	0	14,455	12,344	139,475	166,275
DES.OP	0	0	0	0	0	86	121,771	13,869	135,727
DES.PVTL	0	0	0	0	0	0	0	424	424
DES.PVT	0	0	0	0	0	303,166	186,472	355,694	845,333
DES.FS	0	0	0	0	0	205	102	202	508
Total	11,354,503	10,533,175	12,853,568	7,561,250	35,780,292	54,076,354	1,892,875	4,276,143	138,328,161

Table 7. Key to Abbreviations in Table 6

Abbreviation	Definition
*.BLM	land managed by the Bureau of Land Management
*.FS	land managed by the USDA Forest Service
*.OP	land managed by a public agency other than the above two
*.PVT	privately owned land
*.PVTL	privately owned land under lease
CHP.*	chaparral
WET.*	wetlands
OAK.*	oak woodland
AGR.*	annual grasslands
PGR.*	perennial grasslands
CON.*	conifer lands
SAG.*	sagebrush
JUN.*	juniper lands
DES.*	desert

Impact of Wildland Fire on Grazing Value

Wildland fire impacts rangeland by burning up the forage present on the land at the time of the fire, as well as by reducing forage production for the next two years. In some cases, however, fire can result in a net increase in forage production over time. The actual magnitude of the economic impact to the landowner depends upon the land's carrying capacity, whether the land is being grazed, the time of year at which the fire occurs, the amount of the year's forage which has already been grazed, and the intensity of the fire. When grazed lands are burned, lost forage must generally be replaced through feeding oat hay or alfalfa to the livestock (McDougald, pers. comm., 1995).

Replacement feeding costs were calculated using statewide averages for oat hay and alfalfa prices; regional data were not available (USDA Statistical Reporting Service). Prices reported for January 1995 were $85/ ton for oat hay and $123/ton for alfalfa. Transportation costs and feeding costs were each assumed to be $15/ton (McDougald, pers. comm., 1995). One animal unit month of feeding was assumed to be 800 pounds of a 60/40 mix of oat hay and alfalfa (McDougald, pers. comm., 1995).

It was assumed that the burning of rangelands would affect forage productivity for the current year plus two additional seasons (McDougald, pers. comm., 1995). We assumed that although all the standing forage would be destroyed by the fire, only half of the year's forage production would be lost because, on average, half of the forage would be consumed by livestock before the fire occurrence. The first year after the fire, forage production was assumed to be 50 percent of normal. The second year after the fire, production is assumed to be 80 percent of normal. We assumed productivity would be back to normal by the third year after the fire. These assumptions may overstate losses since fire in many cases can increase forage production over time.

Based on these assumptions, we compared the discounted three-year stream of costs of forage provision without fire to the three-year stream of costs with fire (including the costs of providing supplemental hay and alfalfa feeding). A 5 percent real discount rate was used. The difference between these two cost streams represents the loss to grazers due to fire.

We calculated these losses on a per-acre basis at the disaggregated level of region, cover type, and ownership. Table 8 presents the results when the fire affects grazed lands specifically. Table 9 presents the results for rangeland as a whole — whether grazed or not — based on the assumption that the probability of fire affecting an acre of grazed rangeland versus an acre of ungrazed rangeland is proportional to the relative fraction of all rangeland that these two categories represent. Since one does not know ahead of time whether the rangeland that will burn is grazed or not, the values presented in Table 8 are the most appropriate ones to use for fire planning. It should also be noted that grazed acres are more likely to receive fire prevention treatments than ungrazed acres, and thus may actually be at somewhat lower risk to fire than ungrazed acres.

Table 8 shows that the weighted statewide average loss when grazed rangeland burns is $24/acre. Average costs range from $4 per acre on the South Coast to $52 per acre on the North Coast.

Table 9 shows that the weighted statewide average loss when rangelands in general burn is $8 per acre. Average costs range from $1 per acre on the South Coast to $25 per acre in the San Joaquin Valley.

Recreation, Cultural and Historic Resources

Introduction

This report discusses wildland recreation and unique assets in California and how their values are affected by wildfire. Part one identifies recreation assets; part two assesses their commodity and non-commodity market values and how they are affected by wildfire.

California's 18 national forests, 17 national park units, nearly 300 state park units, and numerous county and local parks are a major recreation draw for state residents, people from other states, and citizens of other nations. Unique natural places, such as Yosemite National Park, often exert a powerful force on the imagination, and contribute to the world perception of California as the place that "has it all," not just beautiful beaches, shimmering deserts, snow-capped mountains, and fertile valleys, but some of the world's most spectacular hunting, fishing, hiking, and camping country as well. Recreation visits to California's state parks, national forests, and national parks exceed all other states in the nation (U.S. Department of Commerce, 1986). Visitation figures are important as a means of gauging just how many people visit California's wildlands and forests, and just how much money those facilities generate themselves. But this is only a part of the picture, for many tourists attracted by recreation opportunities make a significant contribution to the state economy which is not reflected in the identification of actual recreation market values. Visitors get to California by purchasing airline

Table 8. Cost Impact of Burning One Acre of Grazed Rangeland (in dollars)

Cover Type and Ownership	North Coast	Northern Interior	Sacramento Valley	Central Sierra	Central Coast	San Joaquin Valley	East Side	South Coast	Weighted Average
CHP.BLM	$3.08	$12.34	$12.96	$8.02	$17.53	$5.43	$3.61	$8.41	$9.61
CHP.OP	35.76	29.13	13.12	7.71	15.98	6.81	41.46	16.88	15.90
CHP.PVTL	33.10	27.56	13.62	8.00	16.12	6.44	48.85	15.98	19.25
CHP.PVT	33.10	27.56	13.62	8.00	16.12	6.44	39.23	15.98	14.98
CHP.FS	40.77	9.02	19.88	13.05	19.53	12.11	9.89	1.16	4.13
WET.BLM	0.00	77.94	0.00	0.00	0.00	0.00	71.69	25.56	71.50
WET.OP	80.54	102.35	65.82	66.36	65.14	80.56	501.15	87.37	76.97
WET.PVTL	76.20	96.83	77.55	62.79	75.88	94.91	590.44	102.94	81.33
WET.PVT	76.20	96.83	62.28	62.79	60.93	76.22	474.15	82.66	79.85
WET.FS	0.00	37.67	68.66	32.98	0.00	51.92	19.03	12.00	36.93
OAK.BLM	59.43	97.85	83.02	73.16	81.97	80.57	0.00	26.95	79.83
OAK.OP	80.59	122.36	49.21	35.32	30.97	54.90	0.00	18.26	33.07
OAK.PVTL	76.25	115.77	46.65	41.61	29.30	51.94	0.00	21.51	55.70
OAK.PVT	76.25	112.50	46.65	33.42	29.30	51.94	0.00	17.27	41.62
OAK.FS	124.83	64.58	58.97	49.38	155.69	47.98	0.00	1.17	27.12
AGR.BLM	173.26	97.67	80.24	108.42	117.69	93.66	0.00	60.05	85.71
AGR.OP	135.80	132.39	36.24	45.60	48.29	63.15	0.00	56.65	46.46
AGR.PVTL	117.83	121.43	37.61	46.49	49.40	59.74	0.00	53.60	85.04
AGR.PVT	117.83	121.43	37.61	46.49	49.40	59.74	0.00	53.60	55.89
AGR.FS	243.99	98.09	114.66	108.37	131.86	102.25	0.00	61.43	98.13
PGR.OP	105.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	105.67
PGR.PVTL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PGR.PVT	99.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	99.98
PGR.FS	0.00	11.56	32.57	7.10	0.00	0.00	22.95	0.00	18.58
CON.BLM	6.19	5.99	8.99	7.17	15.65	11.29	7.37	9.01	6.98
CON.OP	15.97	10.31	3.55	4.24	7.91	12.68	43.29	13.02	9.31
CON.PVTL	15.11	10.70	3.34	4.40	8.21	11.99	51.00	12.32	8.21
CON.PVT	15.11	10.70	3.34	4.40	8.21	11.99	40.95	12.32	8.47
CON.FS	14.54	6.28	6.30	5.62	10.25	3.91	5.40	10.31	5.93
SAG.BLM	0.00	20.23	15.21	9.35	0.00	12.54	6.66	0.87	10.69
SAG.OP	0.00	25.97	6.99	9.78	13.83	11.57	22.24	1.37	21.41
SAG.PVTL	0.00	24.58	6.33	9.78	13.83	10.95	26.21	1.62	22.48
SAG.PVT	0.00	24.58	6.33	7.86	11.11	10.95	21.04	1.30	18.67
SAG.FS	0.00	20.57	16.28	10.34	0.00	13.02	10.49	0.00	15.00
JUN.BLM	0.00	9.68	11.22	0.00	0.00	7.35	5.75	3.20	5.91
JUN.OP	0.00	25.84	8.02	0.00	8.05	9.42	42.82	12.33	38.24
JUN.PVTL	0.00	24.45	9.45	0.00	8.05	11.09	50.45	11.66	23.65
JUN.PVT	0.00	24.45	7.59	0.00	6.47	8.91	40.51	11.66	15.84
JUN.FS	0.00	10.90	8.88	0.00	2.64	7.43	6.31	4.29	8.87
DES.BLM	0.00	0.00	0.00	0.00	0.00	3.35	2.21	1.12	1.23
DES.OP	0.00	0.00	0.00	0.00	0.00	2.31	8.25	1.11	4.98
DES.PVTL	0.00	0.00	0.00	0.00	0.00	2.73	9.72	1.05	1.05
DES.PVT	0.00	0.00	0.00	0.00	0.00	2.19	7.81	1.05	1.69
DES.FS	0.00	0.00	0.00	0.00	0.00	3.11	0.81	0.89	1.22
Wtd. Ave.	$52.45	$21.04	$23.95	$21.21	$30.93	$41.25	$10.64	$3.52	$23.59

This table measures the loss to the owner/grazer when an acre of grazed land burns. It is based on the difference between feeding the livestock forage vs. feeding them hay/alfalfa.

Table 9. Cost Impact of Burning One Acre of Rangeland (in dollars)

Cover type and Ownership	North Coast	Northern Interior	Sacramento Valley	Central Sierra	Central Coast	San Joaquin Valley	East Side	South Coast	Weighted Average
CHP.BLM	$0.21	$1.69	$0.41	$0.29	$0.99	$1.64	$0.00	$1.24	$0.99
CHP.OP	0.04	0.26	0.24	0.01	5.29	0.12	0.00	0.13	1.74
CHP.PVTL	10.01	4.19	4.15	3.14	9.21	3.41	0.00	3.92	5.03
CHP.PVT	10.01	4.19	4.15	3.14	9.21	3.41	3.01	3.92	6.04
CHP.FS	0.06	1.88	1.39	2.14	1.49	0.92	1.14	0.84	1.21
WET.BLM	0.00	19.74	0.00	0.00	0.00	0.00	13.08	3.91	13.24
WET.OP	2.26	1.83	0.08	0.46	14.04	0.61	1.30	0.21	1.58
WET.PVTL	36.77	44.64	0.00	26.68	0.00	0.00	0.00	0.00	36.90
WET.PVT	36.78	44.65	23.93	26.67	60.93	64.01	40.18	15.74	42.23
WET.FS	0.00	10.79	17.08	6.20	0.00	7.02	3.42	2.49	8.26
OAK.BLM	3.24	10.50	2.23	2.99	3.70	13.27	0.00	4.11	6.81
OAK.OP	0.01	6.97	8.03	0.02	11.30	2.32	0.00	0.19	7.55
OAK.PVTL	41.40	35.25	20.59	0.00	24.64	50.15	0.00	0.00	35.67
OAK.PVT	41.40	34.25	20.59	21.43	24.64	50.14	0.00	8.26	31.10
OAK.FS	113.97	7.51	9.57	6.69	78.88	12.88	0.00	1.17	9.51
AGR.BLM	7.43	14.81	3.61	3.76	8.65	22.25	0.00	21.75	14.48
AGR.OP	0.77	2.91	12.07	0.19	26.51	0.97	0.00	0.67	11.69
AGR.PVTL	52.16	37.08	21.35	31.17	39.94	57.95	0.00	21.92	43.74
AGR.PVT	52.16	37.08	21.35	31.16	39.94	57.96	0.00	21.90	42.19
AGR.FS	2.93	22.72	2.85	3.75	0.00	19.96	0.00	17.68	15.82
PGR.OP	5.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.64
PGR.PVTL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PGR.PVT	74.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.08
PGR.FS	0.00	2.81	9.59	1.06	0.00	0.00	5.40	0.00	4.28
CON.BLM	0.35	1.14	0.30	0.21	0.31	4.12	0.64	1.64	0.74
CON.OP	0.00	0.09	0.11	0.00	0.47	0.06	1.33	0.06	0.08
CON.PVTL	3.24	2.93	2.55	2.14	3.03	8.42	0.00	3.62	2.90
CON.PVT	3.24	2.93	2.55	2.14	3.03	8.42	1.86	3.62	3.13
CON.FS	0.27	0.96	1.10	0.94	1.06	0.81	1.79	1.06	0.98
SAG.BLM	0.00	5.41	1.91	0.47	0.00	3.35	1.21	0.64	2.77
SAG.OP	0.00	1.15	0.10	0.00	0.00	0.10	1.13	0.03	0.96
SAG.PVTL	0.00	12.14	6.33	0.00	0.00	7.97	0.00	0.00	11.76
SAG.PVT	0.00	12.14	6.33	1.83	8.95	7.97	9.26	0.56	10.32
SAG.FS	0.00	5.40	4.76	0.67	0.00	2.44	2.32	0.00	3.54
JUN.BLM	0.00	2.48	2.40	0.00	0.00	1.61	1.10	2.13	1.83
JUN.OP	0.00	0.46	0.77	0.00	0.00	0.46	1.08	0.02	0.84
JUN.PVTL	0.00	5.88	0.00	0.00	0.00	0.00	0.00	2.43	5.63
JUN.PVT	0.00	5.88	7.15	0.00	2.43	4.37	8.89	2.43	4.78
JUN.FS	0.00	2.93	2.14	0.00	0.02	1.22	1.32	0.43	1.93
DES.BLM	0.00	0.00	0.00	0.00	0.00	1.03	0.27	0.48	0.48
DES.OP	0.00	0.00	0.00	0.00	0.00	0.00	0.73	0.03	0.18
DES.PVTL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.40
DES.PVT	0.00	0.00	0.00	0.00	0.00	2.05	5.54	0.40	0.79
DES.FS	0.00	0.00	0.00	0.00	0.00	0.82	0.07	0.14	0.16
Wtd. Ave.	$10.94	$4.93	$9.44	$7.26	$16.35	$24.64	$1.86	$1.19	$8.49

This table measures the loss to the owner/grazer when an acre of rangeland burns. It is assumed that the amount of such rangeland that is grazed is directly proportional to the amount of all such rangeland that is grazed.

tickets, they stay in hotels, purchase meals and gasoline, and often do many other things besides outdoor recreation. Non-residents constitute a significant portion of recreational use of the state's wildlands. The California Department of Tourism estimates that non-residents accounted for 46 percent of the 48 million trips taken in California during 1983-84. Nearly 3 million non-resident trips are estimated to have had outdoor recreation as the primary purpose and consisted of visits to the state's parks and forests (Keye, Donna and Pearlstein Inc., 1985).

Recreation and Unique Areas in California

General Wildland Recreation. Outdoor recreation is typically defined in terms of Recreation Visitor Days (RVDs). One RVD represents 12 hours of participation in any recreation activity. According to information obtained from the relevant agencies, annual forest and rangeland recreation on state and federal lands has averaged over 112 million RVDs in recent years according to data collected from the relevant agencies (Table 9). National forest use amounted to 71.5 million RVDs, national parks 19.8 million RVDs, state parks 12.8 million RVDs, and Bureau of Land Management lands about 8 million RVDs.

National forest recreation in the state is estimated to represent one quarter of all national forest recreational use throughout the United States, although the 20 million acres of national forest land represent only 11 percent of the national total. Recreation on national forests is distributed among the 18 national forest units administered in the state.

The National Park Service administers 22 units in California, although not all of these provide wildland recreation opportunities. Yosemite National Park is the most visited national park in the state and one of the top national park destinations in the nation. Internationally renowned, it draws thousands of visitors from outside the United States each year.

The Bureau of Land Management manages 17 million acres of California lands. Off-highway driving and camping are the most popular activities.

The state park system contains nearly 300 units and covers almost 1.3 million acres. Anza-Borrego Desert State Park in San Diego County accounts for 553,000 acres, or nearly half of the total state park system acreage. Average size of the other parks is 5,000 acres. About one-half of the 300 units, or 1.2 million acres, support some form of wildland recreation.

The central Sierra region is the most heavily used recreation area in the state. This is a function of the large number of recreation opportunities on national forests and parks (including Lake Tahoe) and the close proximity of major population centers. Southern California also supports a high number of RVDs, particularly on national forests. Southern California has less national forest acreage (about 1.8 million acres) than any other region except the North Coast Region (0.9 million acres). Yet the amount of national forest use is higher than anywhere else in the state and 30 times greater than the North Coast.

Recreation on lands other than those owned by the state or federal government is more difficult to assess because there is little coordinated record-keeping and few available records. These other lands include private recreation facilities, such as campgrounds, hunting clubs, public utility lands, and county, city and regional parks.

Wildlife-Oriented Recreation. Wildlife-oriented recreation is a significant and high-value portion of wildland recreation. As indicated below in the section on effects of wildland fire on wildlife, fire effects are generally negative for fisheries, but can be positive, negative, or neutral with respect to other wildlife. The next few paragraphs illustrate the importance and value of wildlife-oriented recreation in California.

One partial measure of the value of wildlife-oriented recreation is expenditures for fishing and hunting licenses. In 1994, almost 2.4 million sport fishing licenses were issued in California, along with close to 900,000 sport fishing stamps. In total, these generated almost $4 million in license and stamp revenues. Hunting is also a popular recreational activity. More than 354,000 hunting licenses and 828,000 tags and permits were sold in the state in 1994. These sales generated about $14.6 million in revenues to the state. In total, fishing and hunting generated $18.6 million in licensing revenues.

Wildlife-oriented recreation generates some of the highest user values of any recreation form, according to the USDA Forest Service (1990). Based on this source, a wildlife and fish user day (WFUD) in California is valued at $77 for fishing, $40 for hunting, and $88 for non-consumptive wildlife use (all figures in 1995 dollars).

A survey sponsored in the mid-1980s by the Department of Parks and Recreation indicated that more people may participate in non-consumptive types of wildlife recreation than do actual hunting and fishing, such as bird watching or wildlife photography (California State University 1987). Out of the survey sample of 2,526 people statewide, nearly 34 percent said that they spent some or most of their leisure time outdoors and participated in at least one non-consumptive wildlife activity. Another 32.5 percent indicated they spent some or most of their leisure time outdoors and participated in at least one non-consumptive wildlife activity and also fished and/or hunted. Only about 3 percent stated they spent some or most of their leisure time outdoors, and hunted and/or fished, but did not participate in non-consumptive wildlife activities.

Archaeological and Historical Sites. Archaeological and historical sites represent another type of unique resource found in California. These include prehistoric Indian village sites, petroglyphs, pictographs (rock paintings), midden deposits, human burial grounds, caves, hunting blinds, and bedrock milling sites. Historic sites include buildings and structures of historical significance (such as Fort Ross, Bodie, etc.), Gold-Rush-era mining sites, wagon roads and trails, and cemeteries. Many of these historic resources contain irreplaceable assets which are at risk from wildfire. Some of these are situated on national and state park lands and directly contribute to the recreational use of a park. Most sites, however, have little recreation value as the public is often discouraged from unsupervised visitation due to relic hunting, site vandalism and other impacts. These sites have unique values in addition to contributing to recreation use of forest and range lands.

As of 1995, there are over 100,000 recorded archaeological sites in California; 59,000 of these are on federal lands, 33,000 are on private or other lands, 6,000 on state lands, and 12,000 are located on county, city or special district properties (California Office of Historic Preservation 1995). The California Office of Historic Preservation (1995) has estimated that approximately 100,000 additional unrecorded (undiscovered) archaeological sites exist within the state. This latter group is most at risk from wildfires since their locations are not known, and consequently difficult to protect during fire suppression activities. Additionally, California has 85,000 recorded historic buildings, most of which are situated in wildlands. This figure does not include historic districts in cities, which are excluded from this assessment. It is primarily the 85,000 structures in rural (wildland) locations that are at risk from escaped wildfires in California.

Value of Recreation and Unique Areas in California

USDA Forest Service economists have estimated a market value for each RVD within various recreation categories (USDA Forest Service 1990). The 1995 market value of one RVD is as follows: winter sports $49.86; resorts $20.52; wilderness $16.46; camping, picnicking, swimming $10.10; mechanized travel and viewing scenery $10.31; hiking, horseback riding, and water travel $13.60; and other recreation activities except wildlife and fishing, $65.89. These figures were derived from 1989 data (USDA Forest Service 1990:18-19) and converted to 1995 dollars using the GNP deflator. A weighted average 1995 market value of $13.26 per RVD was estimated for this assessment. This value is only a partial measure of the value of recreation to the state.

Table 10 applies this value to recreation on California public lands to estimate the total and per-acre annual value of the recreation on these lands. Total annual recreation values are estimated at almost $1.5 billion for the four ownership categories. The value ranges from $6 per acre on BLM lands to $141 per acre on state park system lands. Again, it should be emphasized that these are low-bound estimates of the value of public lands recreation in the state. For example, Goldman and Gates (1986) calculated the total spending by wildland recreationists in California to be $4.9 billion, which resulted in $17.3 billion in gross output, $8.2 billion in regional income, and accounted for approximately 207,000 full-time jobs. There is no question that recreation users in California make a significant contribution to the state's economy.

We also estimated the average recreation values lost when an acre of wildland burns. Wildfire does not totally destroy the recreation value of lands that are burned. For example, consider the interest that was generated after the huge Yellowstone fires of 1988. Also, if a person avoids recreating on a given area because it has burned, he or she may be able to enjoy a similar recreation experience on another, unburned area. Of course, once an area burns in a severe fire, it may take years for it to return to its former condition. To what degree these assets are affected by wildfire is a complicated issue. For some recreation use, such as winter sports (e.g., skiing), wildfires do not seem to cause a significant decrease in recreation use of an area. The

Table 10. Estimated Forest and Rangeland Recreation Values in California (1993-94 average)

Landowner	Acres (millions)	RVDs (millions)	Dollars per RVD*	Total recreation value in dollars (millions)	Recreation values (/acre)	Recreation value lost per acre burned
National Park Service	4.7	19.8	13.26	263	56	42
USDA Forest Service	20.4	71.5	13.26	948	46	35
Bureau of Land Management	17.1	8	13.26	106	6	5
State Park System	1.2	12.8	13.26	170	141	107
Total in California	43.4	112.1		1,486	34	26

*$13.26 figure is a weighted average calculated in 1995 dollars.
Source: Listed agencies.

recreation use is sometimes improved by opening up new areas for expanded skiing opportunities. However, overall, statewide recreation use is significantly degraded by wildfires, particularly due to the direct cost of replacing recreation facilities and lost revenues during time of closure, and this effect is realized in millions of lost recreation dollars annually.

We estimated the recreation use value lost when an area burns by assuming that 15 percent of its recreation value is lost during the first year after the fire and that the percentage of value lost decreases to zero in a straight line over a 10-year period. Discounting this stream of losses to the present yields an average value loss of $10.04 per RVD for a burned area. Applying this value to Table 9 yields an average statewide loss of $26 of recreation use value per burned acre of public lands. The loss per acre varies from $5 on BLM lands to $107 for state park system lands.

We also wish to illustrate the damage wildland fire can cause to recreation facilities. The 1993 Green Meadow Fire burned 38,000 acres in the Santa Monica Mountains National Recreation Area (NRA). This NRA is composed of National Park Service lands, four state parks, and privately owned lands. The fire burned numerous bridges along trails, signs, recreation structures, and a pump house which provided water to the five campground sites. The total cost of repairing or replacing these facilities, removing hazard trees, and cleaning up campground facilities and recreation trails was $458,549. An additional $33,614 in lost campground revenues resulted from closure of recreation facilities.

Certain unique areas in California, such as significant scenic areas and major sites of archaeological or historical interest, also attract tourism and contribute to recreation values. These too are extremely difficult to quantify, but they contribute a sizable portion of the recreation value generated at state, local and national parks, and national and state forests. Examples where historical features represent a primary attraction to recreation use include the reconstructed Coast Miwok Village at Point Reyes National Seashore, Patrick's Point State Park with its reconstructed Yurok Village, Indian Grinding Rock State Park, the reconstructed, early-19th-century Russian fortress at Fort Ross, Vikingsholm at Emerald Bay in

Lake Tahoe, and the standing ruins of a historic mining town at Bodie. There are numerous other examples where California's significant cultural sites contribute to its recreation markets.

The 1987 Case Fire provides an example of how unique assets are at risk to wildland fire. This fire resulted in significant damage to a prehistoric archaeological site, an ancient Indian village on a ridgetop. The site was bulldozed by firefighters during the construction of a fuelbreak on the ridgetop. The bulldozer crew knew of the site's location and attempted to avoid it but a change in the fire behavior put the lives of the crew in jeopardy. The dozer operators were forced to make a wide clearing to escape from the flames. In doing so, the archaeological site was badly damaged. CDF was required to conduct a rehabilitation and data recovery project at the site which cost a total of $12,310. While the direct cost of this damage is relatively low, it is important to emphasize that these costs do not adequately express the social value of the damage done to this cultural resource. These types of losses are incalculable.

Structures

Loss of structures is one of the more emotionally gripping and economically significant impacts of wildland fire in California. Statewide, there are an estimated one million housing units within California's wildlands or the wildland/urban interface. Approximately 500,000 of these housing units are owner-occupied, single-family homes with an average replacement cost of $140,000. Taken as a whole, these housing units have an estimated replacement cost of approximately $107 billion.

Based on fire records for 1985-94, an average 703 homes are lost per year to wildland fire in California. It should be noted, however, that the number of homes lost varies significantly from year to year. Housing values typically range from $15,000 on up, with the median, owner-occupied single-family home valued at $140,000 (excluding land value). Since the value of the homesite is little affected by wildfire, only the value of structures and contents should be considered. Discussions with insurance and fire officials indicate that the average market value of a home's contents is 20-25 percent of the replacement value, or about $35,000 per home. Thus, as a first approximation, the median house and contents are valued at an estimated $175,000.

When insurance claims are filed for homes lost to wildland fire, insurance companies face costs to process claims. The overall cost of operating insurance programs is estimated to be 45 cents per dollar of premium. However, this represents the average of all operating costs for an insurance company, not the marginal cost of handling a claim. As a rough approximation, it is estimated here that the transaction cost to insurance companies to settle a claim is 1 percent of the claim amount, on average.

In addition to insured property loss, homeowners also face a significant loss of intangibles in a house fire. While these losses are difficult to quantify and value, they should be considered in the evaluation of the effects of wildland fire on homeowners. As an approximation, we will assume that the average homeowner faces an uninsured loss of $10,000 when his or her home is lost to wildfire.

Additional costs associated with the loss of homes to wildland fire include disruption of utilities, transportation, and other public services. In addition, there are lost wages, costs of temporary shelter, and other costs that cannot be captured easily. We will assume that these costs average $10,500 per house lost to wildland fire.

Table 11 summarizes and totals the above-described costs. Total average annual costs statewide associated with loss of homes to wildfire is $163,271,750, or $232,250 per home.

Table 11. Estimated Average Annual Losses Due to Destruction of Homes by Wildland Fire

Category	Loss Amount
Dwellings and contents lost: 703/year @ $140,000 each	$ 98,420,000
Contents valued at 25 percent of dwelling	24,605,000
Total home and contents loss (equals insurance claim amount)	123,025,000
Insurance company transaction cost	
1 percent of claim cost or 1 percent of $123,025,000	1,230,250
Uninsured losses	
Intangibles: 703 dwellings/year @ $10,000 each	7,030,000
Other improvements on site: 25 percent of home loss or 25 percent x $98,420,000	24,605,000
Total uninsured losses	31,635,000
Disruption costs: 703 dwellings/year @ $10,500 each	7,381,500
Total loss to homeowner and others	$163,271,750

Timber

Introduction

This section estimates the effects of stand-replacing fires on the value of sawtimber in California. The data available allowed quantifying only direct, near-term effects of fire in economic terms. The indirect, long-term effects of stand replacing fires such as altered soil characteristics and forest successional patterns were not considered in this analysis. Indirect effects of non-stand replacing fires such as reduced health and disease susceptibility were not considered in this analysis of stand replacing fires. The analysis considered timberlands[2] available for harvest, excluding reserved lands and lands that did not meet the definition of timberland.

Four ownership categories, five inventory regions, and two forest types within one of the inventory regions, formed the basis for quantifying fire losses on timberlands with different legal and biological characteristics. Ownership categories consisted of:

- National forests
- Other public lands owned by the Bureau of Land Management, individual counties and the state

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[2] *Timberlands as used here denotes land capable of growing at least 20 cubic feet of commercial timber species per acre per year.*

- ○ Forest industry (private holdings 5,000 or more acres)
- ○ Non-industrial private (private holdings less than 5,000 acres)

The five relevant inventory regions, as defined by the Forest Inventory and Analysis (FIA) project of the USDA Forest Service, are:

- ○ North Coast (Del Norte, Humboldt, Mendocino, and Sonoma counties)
- ○ Northern Interior (Siskiyou, Modoc, Trinity, Shasta, and Lassen counties)
- ○ Sacramento (Butte, Colusa, El Dorado, Glenn, Lake, Napa, Nevada, Placer, Plumas, Sacramento, Sierra, Sutter, Tehama, Yolo, and Yuba counties)
- ○ San Joaquin and Southern California (Alpine, Amador, Calaveras, Fresno, Imperial, Inyo, Kern, Kings, Los Angeles, Madera, Mariposa, Merced, Mono, Orange, Riverside, San Bernardino, San Diego, San Joaquin, Stanislaus, Tulare, and Tuolumne counties)
- ○ Central Coast (Alameda, Contra Costa, Marin, Monterey, San Benito, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Solano, and Ventura counties)

The statistical limitations of the non-spatial timber inventories used in this analysis precluded estimating meaningful distinctions between forest cover types in most cases. The North Coast region was the exception: the presence or absence of redwood trees was used to distinguish between the coastal and interior forest types within this inventory region. Table 12 summarizes timberland acreage by cover type/region and ownership category.

Table 12. Acres of Timberland by Ownership and Inventory Region/Forest Cover Type

	Ownership				
Region/Forest Cover Type	**USDA Forest Service**	**Other Public**	**Industrial Private**	**Non-industrial Private**	**All ownerships**
North Coast/ Redwood+ Douglas-fir		114,000	566,000	622,000	1,302,000
North Coast/ Interior Mixed Conifer	619,000	149,000	735,000	808,000	2,311,000
Northern Interior	3,190,000	126,000	1,757,000	580,000	5,653,000
Sacramento	2,526,000	70,000	935,000	708,000	4,239,000
San Joaquin and Southern California	1,898,000	50,000	167,000	303,000	2,418,000
Central Coast	53,000	8,000	24,000	255,000	340,000
All Regions	8,286,000	517,000	4,184,000	3,276,000	16,263,000

Using the FIA inventory data and national forest inventory data, Table 13 presents the average timber volume per acre in each ownership and cover type category. In the next step of the analysis, multiplying current timber market prices from the state Board of Equalization with average volume estimates from Table 13 and timberland acreage from Table 12 resulted in an estimate of total standing timber value, in dollars (Table 14). Table 15 presents standing timber values on a per-acre average basis. Finally, historical records of fire damage provided estimates of the financial loss in timber values per acre resulting from a stand replacing fire (Table 16). based on an estimated loss of 65 percent of value from standing timber value.

The sections below further explain the methodology used to derive the data presented in Tables 12-16.

Table 13. Average Volume of Sawtimber (board feet, Scribner rule) Per Acre, by Ownership and Inventory Region/Forest Cover Type

	Ownership				
Region/Forest Cover Type	**USDA Forest Service**	**Other Public**	**Industrial Private**	**Non-industrial Private**	**All Ownerships**
North Coast Redwood/ Douglas-fir		22,918	23,053	21,365	22,235
North Coast/ Interior Mixed Conifer	21,550	17,002	8,788	6,457	11,921
Northern Interior	11,670	9,821	8,255	7,405	10,130
Sacramento	22,200	14,411	14,576	11,279	18,566
San Joaquin and Southern California	20,120	9,410	17,872	3,913	17,712
Central Coast	10,500	11,626	26,976	24,008	21,821

Table 14. Total Value of Timber (millions of dollars), by Ownership and Inventory Region/Forest Cover Type

	Ownership				
Region/Forest Cover Type	**USDA Forest Service**	**Other Public**	**Industrial Private**	**Non-industrial Private**	**All ownerships**
North Coast Redwood/ Douglas-fir		$1,371	$7,773	$7,391	$16,535
North Coast/Interior Mixed Conifer	5,998	1,330	3,848	2,902	14,078
Northern Interior	14,513	495	5,423	1,638	22,069
Sacramento	24,237	502	5,921	3,698	34,358
San Joaquin and Southern California	11,469	165	984	415	13,033
Central Coast	326	47	409	3,833	4,615
All Regions	$56,543	$3,910	$24,358	$19,877	$104,688

Table 15. Per-acre Value of Timber (dollars per acre), by Ownership and Inventory Region/Forest Cover Type

Region/Forest Cover Type	Ownership				
	USDA Forest Service	Other Public	Industrial Private	Non-industrial Private	All ownerships
North Coast Redwood/ Douglas-fir		$12,028	$13,733	$11,883	$12,700
North Coast/Interior Mixed Conifer	9,690	8,923	5,235	3,591	6,092
Northern Interior	4,549	3,932	3,086	2,825	3,904
Sacramento	9,595	7,178	6,333	5,223	8,105
San Joaquin and Southern California	6,043	3,306	5,894	1,369	5,390
Central Coast	$6,158	$5,813	$17,035	$15,030	$13,574

Table 16. Estimated Loss, in dollars per acre, of Timber Resulting from a Stand-replacing Fire, by Ownership and Inventory Region/Forest Cover Type

Region/Forest Cover Type	Ownership				
	USDA Forest Service	Other Public	Industrial Private	Non-industrial Private	All ownerships
North Coast Redwood/ Douglas-fir		$7,818	$8,926	$7,724	$8,255
North Coast/Interior Mixed Conifer	6,299	5,800	3,403	2,334	3,960
Northern Interior	2,957	2,556	2,006	1,836	2,538
Sacramento	6,237	4,666	4,116	3,395	5,268
San Joaquin and Southern California	3,928	2,149	3,831	890	3,504
Central Coast	$4,003	$3,778	$11,073	$9,770	$8,823

Timber Volume

The most recent FIA inventory data, 1,150 plots measured in 1985, formed the basis for the standing volume estimates in this analysis, except for the national forests. The standing volume estimates were derived by adding the per-acre expansion of individual tree volume estimates on each plot, and adding all plots and their acreage expansion factors. National forest timber volume data is based on individual forest inventory data, as compiled in USDA Forest Service publications.

Timber Value

Timber values in dollars came from the State Board of Equalization's market price schedules for the major commercial timber species in the state, by regions. Weighting the timber volume estimates by tree species with their respective estimated acreages provided an accurate current market value of the estimated standing inventory. Table 14 shows the value of the estimated total volume of standing timber in each region and ownership category. These values are valid only to the extent that sellers are price takers; the analysis did not consider the price-depressing effect of releasing large amounts of timber on the market. Table 15 shows the per-acre value of the standing timber in each region and ownership category. It resulted from dividing the total value estimates in Table 15 by the estimated acreage in each region and ownership category in Table 13.

Value Loss after Fire

The impact of fire on timber value was expressed in terms of the dollar value destroyed on the average acre in a stand replacing fire. The analysis included the following assumptions about timber value loss:

- ○ A stand replacing fire will result in a total loss of 30 percent of the standing merchantable board foot volume. Although immediate salvage can theoretically recover close to 100 percent of the green volume, a delay of 6 months or more before salvage can be undertaken is common. The 30 percent value loss is an applicable figure for both the 1987 Stanislaus fire and the 1991 Fountain fire. The remaining 70 percent of the merchantable volume, although reduced in value, will be fully recovered through salvage harvests.
- ○ Harvest values of salvaged timber are approximately 50 percent of green tree values. This overall estimate came from the state Board of Equalization's green harvest and salvage harvest value schedules.

Based on these assumptions, only 35 percent of the prefire timber value (70 percent of volume times 50 percent of value) can be captured after a stand replacing fire. Thus, 65 percent of the value is lost. Table 16 shows the estimated dollar value per acre lost as a result of a stand replacing fire. The figures in Table 16 were derived by calculating 65 percent of the per acre value estimates in Table 15.

Water and Watersheds[3]

Introduction

Water is both an element of the environment and a commodity. Water rights and the facilities to harness water are real property. The value of water is expressed in terms of its beneficial uses. But how much water supply does California have, what is it used for, and what is its overall value to the state? And given that water is a valuable resource, how does wildfire threaten the beneficial uses of the state's waters?

Pacific storms in the winter months and mountains tall enough to make them release their moisture bless California with an ample, if maldistributed, water supply in most years. Average statewide precipitation is about 23 inches and most of it (about 60 percent) is used by native vegetation or lost by evaporation. Estimated average annual runoff amounts to about 71 million acre-feet. This water is first used to maintain healthy riparian ecosystems in California's rivers, and eventually much of it is also used for urban and agricultural supply. The available surface water supply totals 78 million acre-feet when out-of-state supplies from the Colorado and Klamath Rivers are added.

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[3] *The department is working with the State Water Resources Control Board staff, Department of Water Resources, USDA Forest Service, Los Angeles Flood Control District, Pacific Gas & Electric Co. and East Bay Municipal Utility District to refine our approaches to water and watersheds.*

California uses 6 million acre-feet annually to supply urban users with residential, commercial and industrial water to support a population of over 30 million and the eighth largest economy in the world. After capture, storage, treatment, and distribution, retail customers pay on average $465 an acre-foot for this water — an annual retail value approaching $3 billion. California uses an additional 24 million acre-feet annually to support irrigated agriculture. At an average, unsubsidized value of $60 an acre-foot at the farm, this water has a value of about $1.5 billion. California also dedicates 24 million acre-feet to environmental uses. Most of this water runs its natural course through the state's river systems. Some of it is stored and released during the dry season to improve water quality in the Delta and other similarly environmentally sensitive areas. Assigning a value to this mix of wet and dry season water is problematic, but a value of $40 an acre-foot for this water would equate to about a billion dollars.

Water has many other non-consumptive values to Californians as well. For example, falling water is used to generate large amounts of hydroelectric power. In an average year, California produces about 40,000 gigawatt-hours of hydroelectric power with a value of approximately $1.6 billion. Additionally, water provides recreational opportunities and scenic beauty throughout much of the state. Conversely, excessive amounts of water can cause serious problems in many areas of the state. Floods may lead to fatalities and damage extensive amounts of personal property. A multitude of flood control structures and other measures are used to mitigate this threat. Large, intense wildfires that significantly alter hydrologic regimes and increased erosion and sediment loads can adversely affect the value of surface runoff water. Smaller, lower intensity fires that do not produce these impacts are generally not a problem. Indeed, frequent, low intensity fires are a natural part of many ecosystems. They reduce the incidence and severity of large, intense wildfires and produce the most stable watershed conditions in the long run.

California's watersheds are fire-adapted, but fire suppression is still critical to protect life and property. Total fire suppression, however, can be detrimental in the long-term to fire-adapted environments. Aggressive fire suppression without an equally aggressive program of fuels and fire hazard reduction leads to larger, more intense fires, which is ultimately detrimental to both environmental and commodity uses of water.

Since the work presented in this section was completed, we have initiated a cooperative process with the State Water Resources Control Board staff and others to refine the methods and data utilized here. An updated water and watersheds assets report will be issued upon completion of this process.

Types and Magnitudes of Impacts

Large, intense wildfires often have a negative effect on water quality and beneficial uses as a result of increased erosion and, consequently, sedimentation. Sediment increases are measured in terms of additional cubic yards of material delivered to streams and transported to places of deposition. Additional sediment storage can alter a stream's form and function in a deleterious manner. Water quality effects of wildfires are usually measured as increases in total dissolved solids (TDS) and total suspended solids. Large, intense wildfires may also increase runoff and peak flows. Increases in runoff are expressed in additional acre-feet of water.

The magnitude of these impacts in a given watershed can vary greatly with a number of factors, including type and condition of the vegetation, type of soil and its moisture content at the time of the fire, level of heat generated by the fire, slope, aspect, proximity to the nearest watercourse, and the timing and intensity of post-fire storms (USFS 1979a). Without the detail of specific cases, fire related watershed impacts can only be described in general terms.

Accelerated erosion usually leads to accelerated sedimentation. Experience on the Stanislaus National Forest, for example, indicates large, intense wildfires produce an average of 20 to 50 tons per acre per year of erosion for the first two years following burning (J. Frazier and A. Janicki, Stanislaus National Forest, pers. communication). Of this amount, about half, or 10 to 25 cubic yards per acre per year of the eroded material, reaches a stream and becomes sediment. In contrast, unburned forest lands have erosion rates of less than one ton per acre per year and less than a fifth reaches a stream to become sediment. Similarly, estimates of hillslope erosion on the Shasta-Trinity National Forest following extreme wildfire events in 1987 on 50 percent slopes with no remaining ground cover ranged from 10 to almost 40 cubic yards per acre, depending on the soil type present (Miles and others 1989). Monitoring with silt fences installed in swales on burned areas of the Shasta-Trinity with granitic soils having very little ground cover and steep slopes produced sedimentation rates up to 12.2 cubic yards per acre (Miles and others 1992).

Experience in chaparral is somewhat different (DeBano 1989). Erosion and sediment production in chaparral is more variable than in forest lands for both unburned and burned conditions. In unburned watersheds, sediment was found to collect in debris basins at rates ranging from 0 to 109 tons per acre per year[4]. The range is great due to the tendency for sediment mobilization only during infrequent large storms. In burned chaparral watersheds, sediment has been collected at rates from 0 to 312 tons per acre per year (McIlvride 1984). Recently burned chaparral watersheds generally yield 6-35 times more sediment than their unburned counterparts and average a 10-fold increase (Davis 1980). Hillslope erosion rates following burning have been found to range from less than one ton per acre per year to more than 200 tons per acre per year, with slope being a critical factor in determining the amount of erosion that occurs. As with forest lands, erosion rates are high immediately after burning, but generally return to prefire levels within a few years. This is not the case, however, for steep areas where shallow-seated landsliding is the dominant erosional process. For these chaparral covered areas, the dominant window of susceptibility is 6 to 10 years following fire when total root biomass is lowest (Rice and others 1982). In contrast, burned grasslands develop a vegetative cover so quickly that increases in erosion and sedimentation rate are generally negligible.

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[4] *Various studies have reported erosion in different units; a ton can be assumed to be approximately one cubic yard.*

Large, intense fires can also have an adverse impact on water quality (USFS 1979b). Forested watersheds generally produce water with very low TDS (<50 mg/l) and low turbidity (<1 NTU). The quality of water produced from undisturbed chaparral lands is generally lower and more variable. Intense burns can cause large increases in TDS and turbidity on forest and chaparral covered areas, particularly during storm periods. For instance, Cohen (1982) found increased concentrations of nitrogen and suspended sediment in Milliken Reservoir (Napa County) resulting from the first large storm following the Atlas Peak wildfire. Nitrate concentrations were elevated above background levels during the first winter, but did not reach levels detrimental to domestic water usage. Cohen concluded that watersheds with higher nitrate background levels and similar influxes of nutrients as occurred in Milliken Creek could cause nitrate levels to approach the recommended health limit.

Increased water yield is another potential impact of large, intense wildfires. Where 75 percent to 100 percent of the vegetative cover is removed, runoff increases average from 0.1 acre-foot per acre of burned watershed for basins receiving 15 inches of mean annual precipitation to 0.8 acre-foot per acre burned for watersheds receiving 40 inches of mean annual precipitation (based on Turner 1991). Studies of shrub recovery after prescribed burning have found that the canopy reaches the 75 percent cover or 100 percent maximum evapotranspiration level in about 8 years after burning, and that the season of burning significantly affects canopy recovery (Lampinen 1982). By extension, the wildfire-caused increase in runoff might be expected to decline to near zero over a similar period of time. In forested areas, water yield increases are minimal until basal area loss to fire exceeds 50 percent (Potts and others 1989).

The additional water yields that result from catastrophic wildfires, however, are generally considered to have little value for water supply and hydroelectric energy generation. Almost all of the additional runoff occurs during the wet season and must be regulated for dry season use by surface reservoir storage (Ziemer 1987). Typically flows increase during large storm events when water is often passed through reservoir catchment systems because of flood management concerns. Additionally, the added water yield does not contribute to a dependable water supply or firm energy capacity, since the additional water is only a very temporary supply.

Peak flows, or maximum instantaneous discharges, are also increased by large, intense wildfires. In Central and Southern California watersheds, it is estimated that peak flows will often increase about 2.5 times over pre-burn conditions with intense burning conditions (R. Blecker, Los Padres National Forest, pers. comm.). Sinclair and Hamilton (1955) found that storm flow increased threefold to fivefold on a burned California chaparral watershed during the first rainy season following wildfire. Rowe and others (1954) reported increases in peak discharge that varied from 2 to 45 times normal, depending on storm size, in the first year following wildfire. Nasseri (1989) used the Stanford Watershed Model to predict the impact of wildfire on a Southern California chaparral covered watershed. This simulation indicated that a moderate storm would produce a 200 percent increase in runoff and the frequency of flooding increased dramatically. Peak flow increases in intensely burned forested watersheds may be less dramatic, particularly in basins that are wholly or partially snow-dominated (B. McGurk, USFS Pacific Southwest Research Station, Albany, pers. comm.).

Water Uses at Risk and Their Value

The beneficial uses of water as a commodity include: agriculture, urban (including residential, commercial and industrial), hydroelectric power generation, recreation, and rearing habitat for commercial and sport fisheries (see Table 17). Water also has many non-commodity beneficial uses, including aquatic and riparian habitat for non-commercial species of plants and animals, and aesthetics or scenic beauty.

Water prices vary widely in California based on the source of the water and the region and type of use. The value of the water yield that can be readily converted to water supply ranges from zero in water rich areas of the state to about $2,500 per acre-foot in critically water short locations that remove salt from brackish or sea water, such as the City of Morro Bay[5]. Water values north of the Tehachapi Mountains range from $40 to $120 an acre-foot, while south of the Tehachapis values range from $300 to $600 an acre-foot. These are current values, based on estimates that assume available water can be delivered to willing customers.

Table 17. Water Values in California

Beneficial Use	Unit	Market Value	Value (Non-Market)
Urban - Northern 2/3 of California	Acre-feet	$40-120	
Urban - Southern 1/3 of California	Acre-feet	$300-600	
Agriculture	Acre-feet	$3-252	
Hydropower generation	Acre-feet	$0-320	
Fisheries:			
Commercial	$/lb	$1.30	
Sport	Rec-visitor days	$75	
Recreation	Rec-visitor days	>$12	
Aquatic habitat for non-commercial species			X
Aesthetics			X

On average, California uses about 30 million acre-feet (maf) per year of surface water for agricultural and urban purposes. About 5 maf derived from the Colorado River is fed by watersheds outside the state. The remaining 25 maf represents the total average annual consumption of water derived from watersheds within California. Based on regional averages found in the California Department of Water Resources' updated Water Plan (CADWR 1994), this water has a statewide unit value ranging from $3 to $252 per acre-foot[6], with an average of $60 per acre-foot. The total annual value of this water is $1.36 billion.

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[5] *Despite the high cost of facilities and energy for delivery, imported water would likely cost less, but is not yet available.*

[6] *Regional values of agricultural water include: North Coast-$3 per acre-foot, Sacramento-$12, Colorado River-$12, Central Coast-$14, San Joaquin-$19, Tulare Lake-$86, South Lahontan-$150, South Coast-$252.*

Water often has a high value for hydropower production. For example, in 1987 Romm and Ewing estimated the power generation value of water from national forests in California to range between zero and $320 an acre-foot. Water that cannot be run through a hydropower generation facility due to timing or location is worth zero from a hydropower perspective. Water with the highest possible usable head that can be run through one or a sequence of generation facilities is the most valuable. California hydrogenerates an average of 40,000 gigawatt-hours annually. The value of this power at 4 cents per kilowatt-hour (M. Johanas, CA Energy Commission, pers. comm. is about $1.6 billion. This represents a minimum value and does not include the premium paid for peaking power.

Floods, like fire, are a major problem in California. Billions of dollars have been invested over the past several decades, and millions are spent annually, on flood control. Fire related increases in flood magnitude can add substantially to flood damage and repair costs. Large, intense burns make local flooding worse by elevating peak flows and adding large amounts of damage-causing debris to flood torrents.

In Northern California, intense wildfires commonly burn in watersheds with tributaries containing important spawning and rearing habitat for anadromous fish. The value of these fisheries must be considered in terms of both commercial and sport fishing. Decreasing trends in the number of salmon observed in Northern California over the last several years have caused widespread concern about the long-term viability of several species. For example, the California Department of Fish and Game recently asked the State Board of Forestry to list coho salmon as a sensitive species. The number of salmon commercially caught in Northern California from 1989 to 1991 averaged only 1,156,000, with a value of approximately $1.5 million (USFS 1993). In terms of the value of sport fishing, the USDA Forest Service (1990) reported that the value of a fisherman day in California is $74.07 (adjusted to 1995 dollars).

Water-related recreation has become an integral part of society's needs. Reservoirs, natural lakes, and streams can be adversely impacted by large, intense wildfires. Water rafting is estimated to generate just over one million visitor days annually statewide (CADWR 1994). Rugged natural beauty and some of the most renowned fishing streams in North America attract over 10 million people annually to the state's North Coast region alone. The recreational opportunities provided by reservoirs generate enormous benefits to California's economy. In 1985, an estimated $500 million was spent on water-related activities in the Delta and major reservoirs. The estimated 7 million visitors to the Sacramento-San Joaquin Delta generated an estimated $125 million; the 6.6 million visitors to the 12 State Water Project (SWP) reservoirs and the California Aqueduct brought in an estimated $170 million; and benefits of the 11.6 million visitors to 10 of the 22 federal Central Valley Project (CVP) reservoirs totaled $208 million. In addition to the half-billion dollars described above, a similar amount may have been spent at the many local and regional reservoirs and streams (CADWR 1994). These estimates put the total annual value of water-related recreation statewide at $1 billion or more.

Estimates of Net Value Loss Per Acre for Large, Intense Wildfires

Large, intense wildfires can both harm and benefit consumptive uses of water. As previously stated, fire often produces a short-term increase in water yield. If this water can be captured and stored, it can be put to agricultural and urban (including residential, commercial and industrial) uses. Unfortunately, this benefit is usually associated with increased sedimentation and water quality degradation. The type of water use involved plays a major role in determining whether the outcome is positive or negative, but the overall net effect is almost always negative.

As mentioned earlier, large, intense wildfires might produce 0.1 to 0.8 acre-feet of additional runoff per acre annually for the first few years. In the best situations about half of this might be captured and stored for consumption. Depending upon location, the value of the additional water would be between zero and $1,600 an acre-foot. At $60 an acre-foot[7], this increased water yield would be worth from $3 to $12 per acre burned on an annual basis.

Most surface water consumed in California must be stored for later use. Reservoirs trap sediment, resulting in decreased capacity. Large, intense wildfires accelerate sedimentation rates, thereby reducing reservoir storage capacity and the expected life of the impoundment. Replacement capacity is very expensive to construct. For example, the proposed Los Vaqueros Reservoir Project would store 100,000 acre-feet of water at an estimated cost of $450 million (CADWR 1994) or about $4,500 per acre-foot of storage capacity. Enlargement of Shasta Reservoir could increase storage 9.7 million acre-feet at a cost of $4.5 billion or about $464 per acre-foot of storage space. An acre-foot equals about 1,613 cubic yards. Therefore, an intensely burned acre producing an extra 25 cubic yards of sediment the first year after burning would remove about 0.015 acre-feet of reservoir storage capacity. This would be a loss per acre burned of about $7 at an expanded Shasta Lake and $70 at the newly constructed Los Vaqueros Reservoir. Excavation and removal of the sediment generally costs between $4 and $40 per cubic yard, depending on factors such as end hauling distance to disposal sites (M. Bollander, Los Angeles Dept. of Public Works; C. Mitchell, El Dorado National Forest, pers. comm.). This translates to a cost that ranges from $6,452 to $64,520 per acre-foot of removed sediment, which is why it is not often adopted as a practical solution in the case of large reservoirs.

Consumptive use of water, particularly urban uses, suffer most acutely from: (1) direct fire damage to waterworks, and (2) the increased turbidity produced by large, intense wildfires. Neither is quantifiable in the abstract. Water purveyors look for the least expensive and most expeditious ways to cope with the advent or increased frequency in episodes of highly turbid raw water. There are many ways that this type of problem can be addressed. Water purveyors can, in some cases, change their water sources (e.g., drill a well or move the diversion point further upstream). They may be able to increase the storage of raw water, so they can shut off the diversion during periods of high turbidity in the supply. Likewise, they can increase the storage capacity of treated water, so they can suspend water treatment during periods of high turbidity. They can add pretreatment, like sedimentation basins or flocculation, to remove most of the suspended sediment prior to filtration. Alternately, they can install filtration systems that can handle higher turbidity levels efficiently. The costs of these solutions vary widely. Prudent operators will choose the method(s) that best meet their needs at the least cost. Such costs are so dependent on circumstances that no average or typical expenditure can be assigned.

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[7] *The assumed statewide average, as discussed earlier.*

Water conveyance structures such as penstocks and flumes are also at risk to damage from large, intense wildfires. Damage to these must be calculated on a case-by-case basis, given the variability in structure type, accessibility for repair, and degree of damage.

Flood control suffers twice from the effects of large, intense wildfires. First, as we saw in the previous discussion of chaparral lands, the frequency of large floods can be dramatically increased. For example, precipitation that would normally produce a moderate flood may suddenly be capable of producing a much larger runoff event. In a hypothetical case, a community might have to spend ten times as much for facilities capable of providing increased flood protection. Second, increased sediment and debris in flood basins costs between $4 and $40 per cubic yard to remove and dispose. Where increased sedimentation rates from intense fires are 1 to 200 tons/acre/year, annual costs can range from $0 to $8,000 per burned acre for the first few post-burn years, and this does not include the cost of potential flood damage.

Hydropower generation can be both benefited and adversely impacted by large, intense wildfires. As previously stated, fire often produces a short-term increase in water yield which can sometimes benefit hydropower production, but this benefit is often associated with increased sedimentation and water quality degradation. Assuming a water value of $70 per acre-foot[6] for hydroelectric generation, an increase of 0.5 acre-feet of water per acre intensely burned, and a utilization rate of 50 percent, the value of an acre intensely burned would be about $17.50 for the first year. This value would decline to near-zero over an 8-year period. If the increased sedimentation rate is 25 cubic yards/acre/year and the cost of removing sediment from forebays is $4 per cubic yard, the cost of the increased sedimentation would be about $100 per acre burned per year. Furthermore, there would be increased costs associated with additional wear and tear on mechanical equipment, which cannot be quantified readily. The net quantifiable effect of intense wildfire on hydropower generation is estimated to be a loss of $82.50 per acre burned per year for the first 2 to 3 years following wildfire (i.e., $17.50 per acre - $100 per acre = -$82.50 per acre).

Fisheries assets are influenced by the quality of stream habitat that can be impacted by wildfire. Potential impacts from fire include increased sedimentation, water temperature, and nutrient loading (Kaczynski 1994). It is not possible, however, to quantify the impact a large wildfire will have on the value of commercial

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[7] *Value given by Romm and Ewing (1987) for the Upper Feather River.*

and sport fishing. For instance, the amount of sedimentation that occurs will depend on the soil type and slopes present. Even though it is not possible to produce a general relationship between hillslope impacts and reduced number of fish on a statewide basis, it is clear that the impacts from intense wildfire can be severe.

Wildfires reduce recreational assets in watersheds primarily through diminished aesthetic values. While it is still possible to white-water raft down a canyon that has been severely burned, most people would agree that the lowered aesthetics reduce the value of the experience. This type of phenomenon is not readily quantifiable on a dollar per acre basis. By extension, most water-related recreation losses, including reservoir recreation, produced by severe wildfire are not readily quantifiable. In specific cases where the effects of a fire were so severe that the number of visitor days for a particular use significantly dropped, the effects might be quantified. Relating that value to the number of acres burned would not produce reliable results, however, since most outdoor recreation is concentrated on a few scattered, small sites. For example, of the 12 major white-water rafting rivers in the state, more than half the use is concentrated on two relatively short reaches of one river, the American.

Watershed rehabilitation is a real and quantifiable cost of large, intense wildfires. To reduce the adverse impacts previously described, emergency watershed rehabilitation plans are implemented on severely burned watersheds with valuable downstream beneficial uses. It is common to aerial seed the most intensely burned areas with native and non-invasive species of grasses. Ordinarily, only 10 to 25 percent of the burn area is seeded in chaparral areas and less in forested areas (B. Parker, CDF, San Luis Obispo, pers. comm.). Costs range from $30 per acre to $200 per acre and average approximately $60 per acre.

Conclusion

Large intense wildfires negatively impact both water as a commodity and water as an element of the environment. The occasional, short-term positive gains from increased water yield are more than offset by the frequent short and long-term negative impacts of increased peak flows, increased sedimentation and decreased water quality (see Table 18). Dollar estimates for these impacts are elusive, notoriously unreliable, and there is great variability from one site to another in the averages presented here.

Table 18. Impacts Associated with Intense Wildfire

Beneficial Use	Benefit (+) or Cost (-) Per Acre Burned ($)	Comments
Water Yield	+$3 to +$12	1st two years
Hydropower generation	+$17.50	1st two years
Reservoir Storage Capacity	-$9 to -$90	1st two years
Reservoir Sedimentation	-$40 to -$100	1st two years
Debris Basin Cleanout	0 to -$8000	Southern CA
Watershed Rehab	-$30 to -$200	1st year only
Water Quality	negative, unquantifiable	Increased turbidity, suspended sediment
Flooding	negative, unquantifiable	Increased peak flow, debris
Fisheries	negative, unquantifiable	Increased sediment, water temperature
Recreation	negative, unquantifiable	Degraded aesthetics

Wildlife, Habitat, Plants, and Ecological Health[9]

Fire Effects on Wildlife

Fire can have two markedly different effects on wildlife habitats. Large fires do not burn evenly and as a result produce a mosaic of vegetation and post fire plant community succession. Alternatively, at a smaller scale, an intense stand-replacing fire can reduce habitat heterogeneity and foster a uniformity of food and cover value particularly in areas of similar slope, aspect, and soil type. Both outcomes may either be positive, negative, or exhibit no particular effect depending on the degree of habitat patchiness, the wildlife species of concern, and other topographic, climatic, and biological variables influencing fire effects. Similarly, the size, number, distribution, shape of unburned areas, and fire history of adjacent areas can markedly influence the population response of a particular wildlife species. Consistent generalization of the effects of post fire habitat conditions and their implications for wildlife species is not possible. Species may be favored, negatively affected, or exhibit no particular response to the post fire environment.

The general societal and frequently institutional view that fire in all its forms and potential locations results in a wholly negative effect on wildlife is mistaken. California's landscapes are dynamic expressions of climate, topography, soils, and vegetation that are continually changing at a variety of spatial and temporal scales as a result of both natural and human-caused disturbance and subsequent plant community succession. A disturbance regime characteristic of the physical environment of California was present before influence by European man and created habitats in which plants and animals had to adapt and perpetuate their kind. More recent and widespread influences by society on the structure and composition of vegetation brought about by various types of disturbance or the lack of disturbance (e.g., development, timber harvest, fire control policies, and public attitudes toward fire) have influenced the distribution and abundance of many if not most wildlife species.

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[9] *We are working closely with the Department of Fish and Game to further strengthen our analysis for this asset at risk. The discussion will be broadened to better incorporate plant communities, ecosystem health, and a more complete treatment of both game and nongame wildlife species.*

Evaluating the effects of change in fire regimes on wildlife in terms of economic gain or loss to society requires consideration of several factors. These include variation in fire attributes and location, population response of the species to the post fire environment separate from other influences, temporal response of the plant and wildlife community to the fire event, adaptation of species across taxonomic groups that occupy environments subject to repeated fire, and value society places on wildlife in either a generic or species-specific sense. Most of these variables have not been examined or remain unquantifiable.

Direct Effects. The direct effects of fire on wildlife populations vary depending on body size, mobility of the species in question, and the intensity and rate of fire spread. Most vertebrate species move away from fire although some (insectivorous birds, raptors) may be attracted, ostensibly to take advantage of available prey. Although some evidence of vertebrate mortality has been reported, the most common opinion is that these losses are negligible, particularly over the long term for those species of high reproductive potential (Lyon and others 1978). The effects of fire on invertebrate populations vary with habitats used and fire intensity. Populations of surface and soil inhabiting insects are generally significantly reduced although other species are attracted to the burned area. Reinvasion and recovery of pre burn insect populations and species diversity likely parallel recovery of the vegetation (Lyon and others 1978).

Indirect Effects. Fire sets the stage for significant and, depending on habitat type, long-term alteration of habitats. Plant succession is set back, and vegetation structure is significantly and immediately altered. Additional changes occur through the process of plant and animal community succession over time. The net positive or negative effect on habitat capability for all species potentially encountered along the successional continuum is uncertain. The immediate post fire environment presents all terrestrial and aquatic species with significant levels of habitat modification and microclimates that have both positive and negative effects. Long-lasting negative effects of a wildfire in present day fire regimes are likely limited to (1) localized stream habitats, late seral or climax forest habitats sensitive to fire effects and requiring long periods before re-establishment, (2) some seral habitats that through direct and indirect fire effects do not effectively regenerate, and (3) areas occupied specifically by species with unstable populations that are negatively affected by fire occurrence.

The number of species occupying an area may change little in response to fire in adjacent habitats. Bendell (1974) (fide Lyon and others 1978) summarized 22 studies of breeding birds and mammals in burned and adjacent unburned habitat. Overall, fire resulted in a slightly richer avifauna and stable mammalian fauna. Although some change in population density and trend of species was noted, 80 percent of bird and mammal populations remained about the same in density and population trends.

Examples

Late seral forest habitats may be increasingly fragmented or eliminated by fire of high intensity. Consequently, species exhibiting a preference or dependence on certain forest structural attributes characteristic of these plant communities may be directly and indirectly lost through habitat modification or displacement.

> Fire patterns in the Sierra mixed-conifer zone have changed radically in the twentieth century. The annual acreage burned may have declined by two orders of magnitude when compared with historic levels. This in turn has led to historically unprecedented buildups in fuels and to stand structures that are prone to crown fires. Because of these conditions, fires that escape initial suppression efforts — usually those occurring during extreme weather conditions — tend to become large, stand-replacing events. (McKelvey and Weatherspoon 1992 p.261).

> Prehistoric fire regimes have changed over time, and probably considerably for any given climate and vegetation groups, due to human influence. Modern fire control has attempted to remove fires from wildlands. Instead of removing fires, the result has been a gross distortion in the fire regimes, removing most fires of low and intermediate severity and size and increasing the proportion of large, high severity fires (Martin and Sapsis 1992 p.150).

It is axiomatic that fire suppression cannot remove fire from the landscape in perpetuity. Modern fire control, principally as a result of its own success and resultant buildup in fuels, has been required to become increasingly effective. Technological and fire management improvements have markedly influenced the effects and behavior of fire on the landscape. Other factors have also influenced vegetation development and fire regimes and include: wetter than normal weather patterns early in this century, decrease in Native American ignitions, and increase in fire prevention through public education (W. Laudenslayer, USDA Forest Service, pers. comm.).

Fire influence on plant community succession depends on the fire regime and the plant and wildlife species present. Fire occurrence in some shrub steppe habitat types (e.g., some forms of bitterbrush and sage), given present day plant community composition, negatively affects the productivity of the landscape for certain uses. The capability of shrub steppe habitat in the post fire environment of the Cascades and eastern Sierra Nevada to support a socially valued species, (mule deer), is compromised by the influence of a competing and disturbance-tolerant introduced plant species such as cheatgrass. However, in the relatively more mesic habitats of western Sierra Nevada mixed-conifer, where fire suppression has promoted plant community maturation and contributed to a reduction in deer habitat quality, fire occurrence can have a very positive effect (K. Mayer, California Department of Fish and Game, pers. comm.). Finally, unnaturally frequent patterns of fire can overwhelm the inherent ability of many fire adapted species of plants to sustain themselves. This results in type conversion to habitats adapted to a more frequent or intense fire regime (e.g., coastal sage scrub is converted to annual grassland).

California's Mediterranean plant communities, composed of many fire adapted species, depends on fire disturbance to perpetuate the type. It follows that resource use by plant and wildlife species that make up these dynamic communities would exhibit adaptations consistent with periodic habitat disturbance. These adaptations include lack of specialization in conifer habitats, enhanced dispersal capabilities, and high and variable birth rates (Udvardy 1969).

The potential negative effects of present day wildfire behavior on specific fire-sensitive species are clear. Habitat alteration that results in negative effects of any duration or the direct loss of individuals in a small population that is demographically tenuous may result in local extinction and increased risk to the species across the remainder of its range. For example, a major concern is fire risk to preferred habitat of the California spotted owl in the Sierra Nevada (USDA Forest Service 1995).

Assigning Value Lost or Gained

Several factors must be considered when determining the scope of the economic value of wildland fire's impact on wildlife. For example, Althaus and Mills (1982) suggest that:

> Resource output that cannot be readily measured in dollars should not be forced into the economic analysis. Fire effects on rare and endangered species are examples of this class of outputs. Intended resource use plays an important role in determining fire effects. A resource loss takes place only if the resource output would have occurred in the absence of the fire.

Wildlife values are generally expressed in terms of the value of a consumptive use (e.g., hunting) or non-consumptive use (viewing, bird watching, etc.). However other values also exist and include existence value (e.g., the value assigned to the knowledge that a species exists in a particular place) or bequest value (e.g., the value assigned to the knowledge that a resource will exist for the enjoyment of one's heirs). It is likely that existence and bequest values are significantly greater than the more direct forms of value assigned to wildlife (N. Dennis, Jones and Stokes Associates, pers. comm.). A major tool for determining wildlife value lost or gained for use of natural resources that are not traded in markets is contingent valuation. The contingent valuation method (CVM) is a survey technique that constructs a hypothetical market to measure individuals' "willingness to pay" or to accept compensation for different levels of non marketed natural and environmental resources. The CVM is the only method available to measure other resource values, such as the benefits the public receives in existence and bequest values, at various levels of certainty, of unique natural environments or species (Loomis 1993).

CVM has been employed to assess the value of deer, spotted owls, gray whales, goose hunting, wildlife viewing, waterfowl in the San Joaquin Valley, salmon as a product of water quality, and several other species or area specific examples. However, the technique has not been applied to fire effects or other large scale (e.g., a statewide assessment area) habitat perturbations on wildlife (J. Loomis, Colorado State University, pers. comm.).

Determining the effects of fire on populations of all species of wildlife at a statewide scale is not feasible. Similarly, assessing the economic implications of fire on wildlife without the benefit of recognized valuation techniques makes quantitative value judgments more than problematic. Given these observations, it is only possible to make a qualitative judgment concerning the potential impact of fire on all wildlife species, in the aggregate, at a spatial scale represented by the state of California.

Fire was a common influence on the structure and function of California's ecosystems in prehistoric times with as much as 5.5 to 13 million acres burning annually on the average (Martin and Sapsis 1992). Fire regimes varied in period between fires, seasonality, dimension, and other characteristics. The fire regime exhibited under present day fire suppression policies, and as influenced by other historic variables, is one of many small low intensity fires and one of markedly more severe, less frequent, and large size fires. Nevertheless, when one considers qualitatively the economic effect of wildfires on wildlife value for all species, fire regimes, and wildland habitats at the scale of the state, it is likely that fire, at least over the short term, has had a net neutral if not beneficial effect (R. Barrett, UC Berkeley, pers. comm.; W. Laudenslayer, USDA Forest Service, pers. comm.).

Since the work presented in this section was completed, we have initiated a cooperative process with the Department of Fish and Game to refine the methods and data utilized here. An updated wildlife and ecosystem health assets report will be issued upon completion of this process.

Aggregating Values of Assets at Risk Statewide and at Ranger Units

The Fire Plan Process

As part of the fire plan, a methodology has been developed for a coarse-level aggregation of individual assets at risk into a single value measure for a given geographic area. Through this process, geographic areas will be ranked based on the potential impacts ("total cost") of a large fire event, and the likelihood of a large fire event. The objective is to identify high-risk/high- value areas. This coarse statewide analysis will provide a better understanding of the spatial distribution of the assets protected and their risks of fire damage. The statewide analysis serves as a "pointer" to where prefire projects might be needed, and aids in the identification of the "state interest" in terms of where investment of state resources is appropriate.

The process of designing and ranking prefire projects, discussed below, will involve a more detailed and quantitative analysis of assets at risk. This process, which will involve asset stakeholders, will allow the department to rank potential projects based on costs and benefits, and quantify the appropriate state contribution to cost-sharing efforts.

Mapping and Ranking Values of Assets at Risk

The previous portions of this appendix have detailed the methods used for estimating the values of assets. In addition, since the fire plan process involves identifying high value areas based on total cost of a potential large fire event, suppression costs and rehabilitation costs must also be included in the asset analysis.

For the coarse, statewide analysis, each asset at risk is represented within the GIS using the best available statewide digital data sources. For a given asset, geographic areas will be ranked as high, medium or low based on potential impacts from a large fire event, if one were to occur. A large fire event can be thought of as a high intensity fire of at least 5,000 acres. Rankings are developed based on the potential physical fire effects as well as the human valuation of those effects. For example, for air quality the physical effects of a large fire in timberlands is higher than grasslands due to production of a larger volume of smoke. The valuation of this effect will differ based on the additional factor of how many people are affected within specific air basins. For example, a timberland fire affecting the Northeast Plateau air basin will have a lower ranking than one that affects the Sacramento Valley air basin. The specific methodologies for mapping and ranking each asset follows this general discussion.

For the purpose of ranking potential impacts for a given asset, a common statewide geographic unit is required. To link the analysis to a common map source used by department field units, the seven minute quad (1:24,000 scale) boundaries were selected as a base. Since they cover large areas (about 35,000 acres), quads are divided into ninths (about 4,000 acres). The size of these units roughly corresponds to a "large fire event." The significance of this is that it can be assumed that if an asset occurs in the unit, even as a point location (e.g., a nest site or historic building), it will be affected by a large fire event.

By ranking all assets for common geographic units, the results can be displayed in a matrix similar to Table 19. Table entries, potential impact of a large fire event, are either 0 (asset not present), 1 (Low), 2 (Medium), or 3 (High).

Table 19. Example Asset at Risk Ranking Matrix

Quad	9th	Population	Flood	Fire Sfty	Air Qlty	H2O Qlty	Non-Game Wildlife	Ecol Hlth	Game	Recreation	H2O Storage	Hydro Power	Historic Bldgs	Scenic Areas	Range	Timber	Structures	Suppression Costs	Rehab Costs
Colfax	1	3	0	2	2	1	1	1	1	1	2	3	0	1	1	0	3	2	1
	2	3	0	2	2	1	2	2	1	1	3	3	0	1	1	0	3	2	1
	3	2	0	2	2	1	2	2	1	1	2	3	0	1	2	0	2	1	1
	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
	9	1	0	1	2	1	2	1	1	2	3	3	0	1	2	0	1	1	1
Westville	1	1	0	1	1	1	1	1	1	1	2	0	0	2	2	0	1	1	1
	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	

Identification of High-Value Areas

The asset rankings in the above matrix must be combined into an overall ranking based on the entire spectrum of assets the department protects. The result of this process is a designation of high-value areas. By including all impacts of a large fire event, both economic and non-economic, high-value areas represent places where the total cost plus damage of a large fire event would be greatest.

Given the ranking approach used, a scheme for weighting assets at risk, or assigning relative values, must be developed in order to aggregate values across asset categories. Obviously, assigning weights that explicitly quantify the relative importance of the various assets to the state interest will be controversial. However, it cannot be avoided if high-value areas are to be identified. It is not the role of the department to attempt to single-handedly determine these weightings. Rather, this task will be done through the stakeholder process at the ranger unit level.

The State Constitution provides "direction" in terms of the priority ranking various public issues: (1) public safety; (2) public health; (3) the environment; and (4) public welfare. Using these categories as an organizing framework, Table 19 suggests how assets might be grouped.

While the Constitution suggests a higher priority of weighting as you move from left to right in Table 19, it provides no specific weights. While the magnitude of impacts is potentially more severe on the left, the frequency with which impacts occur is far greater on the right. For example, while a large fire event that takes human life is tragic, it is less frequent than the event that has major impacts on public welfare.

Map Production and Distribution

For each asset at risk, two maps will be produced. First, the ranking map displays quad ninths shaded as white (asset not present), light gray (Low), gray (Medium), or black (High). Second, the asset map shows the actual data used to generate the rankings, for example recreation areas, watersheds prone to fire-flood, historic buildings, or range vegetation types. Both of the maps are produced in black and white in 8.5" by 11" format. This will allow stakeholders with standard printers to access the files electronically. It also will allow the department to easily reproduce the maps for distribution.

Field Validation of Assets at Risk

The initial coarse asset analysis for the state will be "fine-tuned" by successive ranger units. For each asset, GIS data will be provided to the ranger unit for the actual location of the assets. The data included may be finer-scale (e.g., from county GIS programs) than that used for the statewide analysis. A ranking matrix (Table 20) generated from the asset data will be provided to ranger units as the database file associated with a GIS data set of quad ninths.

Table 20. Assignment of Assets at Risk to Public Issue Categories

Public Safety	Public Health	The Environment	Public Welfare
Population	Air quality	Non-game wildlife (2) (3)	Game wildlife (3)
Fire-flood watersheds	Water supply	Ecosystem health (3)	Recreation
Firefighter safety (1)			Water storage
			Hydroelectric power
			Historic buildings
			Scenic areas
			Range
			Timber
			Structures
			Fire suppression costs (1)
			Rehabilitation costs(1)

(1) Methodology for mapping and ranking not yet developed.
(2) Includes numerous assets at risk for different rare species, plant communities, and habitats.
(3) Methodology for mapping and ranking under development in cooperation with Department of Fish and Game.

Field validation involves three possible refinements of the statewide analysis. First, the scale of the asset data, changes since mapping occurred, or mapping errors could lead to improper ranking of some quad ninths. For example, a new subdivision may not appear in the population asset data, leading to the associated quad ninth being erroneously ranked as low.

Second, the ranking procedure used at the state level for an asset at risk may be inadequate to capture all instances of high value. For example, the ranking procedure for air quality is based on fuel type and population within air basins. At the local level, even though the larger air basin is sparsely populated there could be a small inversion-prone valley containing settlement especially sensitive to smoke, for example a retirement community. This could merit a higher ranking, even though other areas in the air basin are ranked low.

Finally, there may be assets that have local importance that were not included in the statewide analysis. For example, a timber mill that is an important component of a local economy would not appear in the statewide framework. As a general guide to identifying assets at risk, important qualities to consider include, but are not limited to, uniqueness, economic value, public investment, and any special legal status.

There could be three processes for field validation, depending on the asset at risk (Table 21). Complete validation is used for assets that typically occur as a relatively small number of point or area locations. Actual location and fire susceptibility of all occurrences of these assets can be verified and re-mapped if necessary. For example, all state designated historic landmarks that are buildings (as opposed to plaques) can be visited, evaluated for fire susceptibility, mapped within the GIS, and ranked in the quad ninth matrix. Stream channels that feed hydroelectric power plants can probably be verified without site visits based on field knowledge of local power plants.

Table 21. Assets at Risk for Three Different Validation Procedure Classes

Complete Validation	Spot Validation	Cooperative Validation
Water quality	Population, structures	Wildlife assets at risk
Recreation	Fire-flood watersheds	Ecosystem health
Water storage	Air quality	Range
Hydroelectric power	Timber	
Historic buildings	Suppression, rehab costs	
Scenic areas		

Spot validation will be used for assets that typically cover the entire ranger unit in complex spatial arrangements, where complete validation is not feasible. The ranking map can be scanned for obvious omissions, inconsistencies, or gross errors. For these problem areas, better information will be needed through field experience or actual site visits. The procedure will be to change the quad ninth ranking in the matrix and document the reason for the change. For most of these assets, it will not be feasible to change the actual base data since it will typically involve a significant mapping effort. For example, mapping the actual boundaries of timber stands is probably not an efficient use of departmental resources (and could meet landowner resistance).

For assets that require a specific expertise, it may not be possible for the department to independently validate the data, thus requiring a cooperative validation process. For these assets, the department will need to engage local expertise, such as Fish and Game biologists or extension agents. Further, the stakeholder process at the ranger unit level will help to validate the assets analysis, as well.

Since this is the department's first attempt at the considerable task of ranking and validating all assets susceptible to fire, it is impossible to initially design a framework that captures all important asset values. The asset framework and validation process will be refined as the fire plan process progresses through the ranger units based on direction from the Board of Forestry, department field staff, and stakeholders.

Prefire Management Project Selection and Cost Sharing

Following the aggregation of assets at risk, as described above, and the overlaying of the high fire hazard data layer, the ranger units will be able to identify the high-risk/high value areas that are most in need of prefire management projects. Once these areas are identified, the department can begin to design potential prefire projects (such as fuels management, forest health, land use planning, and fire prevention) to reduce suppression costs and impacts to assets at risk. The next step in the fire plan process is to determine how limited funds should be allocated among these potential projects. Given that department funds for prefire projects are limited, the department must carefully and systematically select the projects that provide the greatest benefit for a given investment.

The primary goal of the department in implementing prefire projects is the reduction of fire suppression costs and subsequent disaster relief to the state;

reduction of losses to assets is of secondary importance. Thus, in selecting among prefire projects to be applied in high risk/high value areas, the department will look first at a project's potential to reduce state suppression and disaster relief costs should an ignition occur during a severe fire weather period. Those projects that provide the greatest potential suppression cost savings for a given project cost will be highest on the department's list for implementation.

Another key factor that must be identified is who is receiving the benefits of the prefire projects and who, accordingly, should be responsible for paying for them (i.e., private landowners, local, state, or federal government, or interest groups). Thus, another step in the project selection and funding process is to determine these factors and to approach the benefiting parties to request that they share in project funding. The department will not be able to implement projects for which other benefiting parties do not provide an adequate amount of cost-share funding, particularly where these projects do not offer a significant potential reduction in fire suppression costs. The process of working out cost-sharing of prefire projects will be carried out through the stakeholder processes conducted at the ranger unit level.

For each potential prefire project considered by a ranger unit, a framework such as that presented in Table 22 will need to be completed. The table shows, for a hypothetical prefire project, which stakeholders — state, local, federal, or private — would benefit. Beyond this simple identification of values and beneficiaries, determinations could be made, to the degree possible, of the relative extent of benefit and, thus, the relative shares of the project costs that each stakeholder should be considered to be responsible to support. For example, assuming that each cell with an X in Table 22 represents an equal benefit value, then the state would be expected to support 1/2 of project cost (split among the Air Resource Board, Department of Water Resources, Department of Fish and Game, and the Department of Forestry and Fire Protection), local government would be expected to support 3/8ths, and private parties 1/8th of project costs.

Table 22. Identifying Assets Affected and Stakeholders for a Hypothetical Prefire Project

	Stakeholders			
Assets at Risk	**State**	**Local**	**Federal**	**Private**
Air Quality	X (ARB)	X		
Range				
Recreation				
Structures		X		X
Timber				
Watersheds	X (DWR/DFG)	X		
Wildlife and Plants	X (DFG)			
Other Assets				
Suppression and Rehabilitation Costs	X (CDF)			

Summary

The fire plan assets at risk assessment results in the identification of prefire management projects, within ranger units and across the state, that offer the greatest net benefits to the state, local government, federal government, and the private sector. The first step of this process, the statewide identification, quantification, and valuation of assets at risk to large, damaging fires, has been largely completed, although work is ongoing with the Department of Fish and Game, the State Water Resources Control Board staff, and other stakeholders to refine our approaches to wildlife, plants, ecosystem health, water, and watersheds. The second step of aggregating assets across the state on a geographically is under way. Work to refine the statewide data has commenced with the first pilot ranger unit. Once this is completed, and the fire hazard overlay added to the analysis, the ranger unit will be able to identify those areas that have the highest fire hazard and risk, and thus merit consideration for the application of prefire projects. Once potential prefire projects are identified, the beneficiary identification and cost-sharing analysis procedures can be initiated. Finally, project selection and implementation decisions can be made on the basis of which projects provide the highest benefits and have received an adequate level of funding from the various benefiting parties.

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Appendix D. Prefire Management Process: For Pilot Ranger Units and the Postfire Component

Summary

"If you always do what you always did, you will always get what you always got." That adage, cited in the Strategic Fire and Resource Protection Plan for the Stanislaus National Forest, presents a solid if colloquial argument for prefire management with a strong postfire element.

Prefire management addresses fuel loading, fuel arrangement, land-use patterns and ignition management to reduce the costs and losses of wildland fires. The postfire element seeks and applies lessons to be learned after each large, damaging wildfire to break the cycle of disastrous fires.

The importance of successful prefire management is evident in the increasing intensity of wildland fires, high damage levels and suppression costs; population increases and movement into wildland areas; and limited fire-protection budgets at private, local, state and federal levels.

Increased development in traditional wildland areas has varied throughout the state, but three fairly distinct categories have evolved: highly developed land; development intermixed with wildland; and solely wildland areas (undeveloped). Add in the changes in the natural fire regime, with accompanying increase in fuel loading, and the result is a complex challenge for wildland fire protection agencies. It should be addressed in planning and implementing prefire, suppression and postfire programs.

All three phases of fire management must be targeted at areas with high-value assets at high risk of loss to large, high-intensity wildfires. This priority acknowledges the limited federal, state and local budgets for fire-protection agencies. It will require inventories of assets to be protected, comparison with the hazards they face, and factoring in the probability a large fire will occur. It is where these areas overlap that additional investment is warranted to reduce losses.

One traditionally narrow aspect of fire protection is postfire treatment. Generally, it has meant rehabilitation efforts to reduce soil erosion after a large intense fire. Little attention has been paid to the future conditions of the landscape and corresponding development, but long-term results dictate the conditions and fuels available in the next large wildfire.

It is time to expand postfire treatment from watershed rehabilitation into broader prefire management that will break the cycle of large damaging wildfire. Postfire management must include postfire assessments, watershed rehabilitation, prefire management analyses and a collaborative planning process. In turn, it must be part of a balanced approach addressing fire prevention, forest health, land-use planning, and fuel and ecosystem management. To be successful, these programs will require:

- ○ Comprehensive planning and increased coordination — not just by the traditional fire and land management agencies but also by private landowners, private industry, the education system and other resource-related organizations.
- ○ A greater level of investment by those who benefit the most from fire protection at private, local, state and federal levels. The costs and benefits of each planning and implementation project will require more attention.

Postfire Assessment

Wildfires affect both natural resources and those developed by society. All these resources were the assets at risk before the fire and the same assets will be at risk when the area burns again. There are the basic steps to postfire assessment.

Identify resources. Nine basic classifications of assets at risk were identified in the wildland fire protection planning effort undertaken by the Board of Forestry. They are life and safety, air quality, range, recreation on public wildlands, structures, timber, water and watershed, wildlife and habitat for listed species, and other resource assets (such as unique scenic areas and cultural and historic resources). These eight provide a starting point; other assets to protect from wildfire can be identified locally.

Take prefire inventory of the area. This would first include such natural conditions as soils, vegetation, topography, watercourses and wildlife habitat conditions. Second is an inventory of prefire development; it would include conditions of the transportation system, types of structures and building materials used, water sources, landscaping near structures, and any presuppression activities that were used.

Note damage to both natural and development resources. An effort should be made to include factors that could have reduced the damage. For example, where structures had wood-shingle roofs, it should be noted that a change in building materials could have reduced the chance of loss. Where a plantation burned, any opportunity to provide prefire treatment of the plantation or surrounding area should be noted.

A Planning Approach for Postfire Hazard Reduction

The information gathered from the postfire assessment supports a planning process that can reduce losses of valued assets when the next large fire burns all or part of the same area. It provides the base for watershed rehabilitation and managing the area overall to avoid re-creating the conditions that supported the first fire. This is prefire management.

It addresses the components of fuel loading, fuel arrangement, land-use patterns and ignition management through a prefire management *plan*. Its tools include traditional fire prevention, vegetation (fuels) management, forest health and land-use planning programs that are more aggressively emphasized in a focused effort. Prefire management does address the protection of high-value, high-risk, high-hazard areas which are likely to burn under optimum fire weather conditions.

Management options include:

- ○ Ignition reduction (education and arson programs)
- ○ Hazard mitigation (prescribed burning or mechanical fuels reduction treatments)
- ○ Exposure mitigation (fire-safe building standards, land-use planning, insurance policy conditions, and application of near home fire-safe guides)
- ○ Fire suppression planning
- ○ Silvicultural treatments for improving forest health
- ○ Forest management to achieve fire-resistant forest structure
- ○ Research and technology development
- ○ Development of cooperative agreements and mechanisms

The implementation and execution of the prefire strategy (postfire hazard mitigation) must be part of a larger process. That provides a comprehensive plan involving all institutions and stakeholders in the planning and implementation of a strategic fire management plan for a given fire environment.

Prefire Planning Process for Pilot Ranger Units

Using the prefire planning process results in guides to postfire hazard reduction. It will yield the most efficient blend of the prefire tools and the ratio of cost vs. losses most acceptable to the local community.

The Board of Forestry 1995 Fire Plan is moving to implement a process for the development of prefire management in three of CDF's ranger units: Nevada-Yuba-Placer, Tuolumne-Calaveras and Riverside. The process will be refined and set an example of how to develop a plan that will reduce the cost of suppression together with a reduction in losses of assets at risk.

The process employs 13 steps that can be followed by any interested community, watershed group, resource conservation district or other locally organized group. This will likely require the participation and assistance of the wildland fire protection and land management agencies within the planning area.

1. CDF staff produces maps of the local area showing:
    - Success rate of initial attack fire protection agencies
    - Fuel hazards

- Commodity and non-commodity assets protected
- Severe fire weather days per year.

All four criteria are to be summarized in high, medium and low risk categories. The results are to be shown on geographic information system (GIS) maps.

2. A separate GIS map is generated that identifies the high-risk areas where prefire management is to be applied.
3. CDF FRAP unit provides the ranger unit with an assets at risk GIS map for each asset in the area.
4. Separate community level meetings are scheduled with respective stakeholders for each asset at risk. The meeting is to acquaint the stakeholders with the process and bring their expertise and knowledge to bear on the asset maps that identify high-, medium- and low-risk areas.
5. Ranger unit personnel provide ground review and validation of the high-risk prefire management areas. Validation will be used to make any identified corrections in GIS maps.
6. Ranger units correct the maps with assistance, as needed, from CDF headquarters staff. Headquarters produces final GIS maps for developing prefire management projects.
7. The ranger unit forms a group with local expertise to define alternative prescriptions for prefire management projects that will reduce total costs and losses of a future major fire burning through the area in severe fire weather.
8. Ranger unit staff, with assistance from headquarters staff and from stakeholders with expertise, identify economic and non-economic assets protected and estimated reductions in costs and losses if prefire management projects are implemented.
9. Ranger unit staff identifies the mix of local, state or federal government or private funding needed for prefire management projects based upon the levels of interest and stockholder values.
10. Prefire management projects are ranked based on cost effectiveness and local community and stakeholder values.
11. The ranger unit holds a second set of meetings with the stakeholders who are to provide funding.
12. The results are presented at a public meeting in the community to review the assessments, results and proposed prefire management projects.
13. The pilot prefire management projects are aggregated for use in approaching the defined funding organizations.

The process not only should address local fire protection needs but also should result in projects to address ecosystem needs. Involving all organizations and the ivate sector provides greater potential of overcoming the institutional and funding ers that have killed similar plans in the past.

Annual (or more frequent) monitoring should be included when prefire management plans are implemented. It helps determine effectiveness of the projects in reducing costs and losses to the wildland fire protection system. Monitoring should be tested against pre-project conditions and should allow for adjustments for initial attack fires. Results should be used to adjust project design and priorities over time.

A prefire management plan will remain a living document as long as it is guided by the local community needs.

Appendix E. Blue Book Allocation and Staffing Standards

Introduction

An analysis of the current Blue Book Staffing and Allocation Standards indicates that they are not meeting current fire protection needs. Existing standards are tied to the 1985 Fire Plan and have not been updated since that time. During this period the value of the funding for the currently authorized positions have been impacted due to various budget decisions. Additionally the funding and authority required to staff the budgeted fire season does not match the operational definition of fire season.

The analysis of fire season length and staffing allocations was conducted using actual ranger unit fire history and damage based on 10-13 years of actual fire occurrence data and 34 years of initial attack success based on the current Board of Forestry policy of suppressing all fires at 10 acres or less. The Department will make a recommendation prior to the 1996 fires season in regard to the current three allocation levels for Board consideration to more accurately reflect the severe fire periods when resources need to be staffed at the highest level of readiness.

The Blue Book is associated with the Temporary Help Blanket positions. These temporary positions are funded for staffing during "an average bad fire season." The staffing and allocation staffing levels are spread over three periods — 1 - Spring; 2 - Peak; 3 - Fall. The continuing goal of these three periods for initial attack engines are as follows:

○ During the spring and fall periods, staffing will be consistent with the fuels, weather, and expected fire severity.

○ During the peak period, every action must be made to provide 3.0 staffing for all initial attack engines during the daylight period with some planned overnight uncovering of second engines at two-engine stations.

During severe seasonal conditions when fire severity is expected to exceed the "average bad fire season,"[10] additional funding, staffing and/or augmentations will be requested.

---

[10] *The "average bad fire season" is an average of the past 10-15 years of fire season activity described in duration of months and weeks, broken out as ("transition" in or out of "peak") and "peak" periods. This is known as the budgeted fire season.*

With regard to contract counties and the Gray Book, any changes to the Blue Book should be studied for applicability.

The current Blue Book fire season periods and staffing standards are included in the appendix for reference.

Action

- ○ The department will be recommending to the Resource Protection Committee changes to the current three allocations levels that more accurately reflect severe periods and a higher level of readiness.
- ○ An analysis of the Gray Book in regard to action #1 needs to be completed within time limits recommended by the Resource Protection Committee.

E Fund

Emergency fund expenditures are being analyzed by the department. The main focus for now is statewide trends. This issue should be brought back for further fire plan analysis when department analysis is complete.

Crew or Station Type	Civil Service Class and Category	Number of Personnel	Allocation Level I	 II	 III
Detection					
lookout	flo - seas pm	2	9	11	0
Dispatch					
ecc - r.o.	clerk	3	3	3	3
ecc - r.u.	capt - coded	3	3	3	3
Ground attack					
1 engine station	capt - coded	2	2	2	2
	capt - perm pm	0.5	8.334	8.486	8.654
	fae - seas pm	1	4.2	4.2	6
	ff-i - seas pm	3.5	16.28	18.78	21.28
2 engine station	capt - coded	2	2	2	2
	capt - seas pm				
	fae - coded	1	1	1	1
	fae - seas pm	1	8.4	9.1	13.6
	ff-i - seas pm	7	32.55	37.55	42.55
dt standard	hfeo coded	2	2	2	2
dt w/1 comp hfeo	hfeo coded	1	1	1	1
Air Attack					
air base	capt - seas pm	2	12	12	12
	fae - seas pm	1	4.25	4.25	4.25
	ff-i - seas pm	3.5	14	14	14
Helitack					
Light copter	capt - coded	1	1	1	1
	capt - seas pm	1	4	4	4
	fae - seas pm	2	7	7	7
	ff-i - seas pm	6	24	24	24
Medium copter	capt - coded	1	1	1	1
	capt - seas pm	3	16	16	18
	fae - seas pm	2	7	7	8.4
	ff-i - seas pm	6	36	36	58.5
	pilot - coded	1	1	1	1
	pilot - seas pm	1	4.5	4	6.5

Allocation Levels: (in months)	Current	Season Length (in months)	Peak Length (in months)
I	May 15 - Nov 15	6	4
II	May 1 - Dec 1	7	5
III	Apr 15 - Dec 15	8	6

Glossary

CEQA

California Environmental Quality Act

climax forest

See *late seral forest.*

CFES-IAM

California Fire Economics Simulator-Initial Attack Module, a software program for modeling the initial attack system and simulating changes in the fire protection system.

contract counties

In California, the six counties that provide fire-protection services in state responsibility areas under contract with the state. These counties are Marin, Kern, Santa Barbara, Ventura, Los Angeles, and Orange.

defensible space

Adequate space (free from flammable vegetation) between structures and flammable vegetation, which allows firefighters a safe working area within which to attack an oncoming wildfire.

FMAZ

Fire management analysis zone, the basic planning unit for fire protection planning.

ICS

Incident Command System.

ignition management

Includes fire prevention program activities that are aimed at preventing the ignition of wildland fires and/or reducing damage from fires. Components include law enforcement, public education, engineering, fuels modification, and fire-safe planning.

initial attack

The wildfire control efforts taken by resources that are first to arrive at a wildfire.

interface, or wildland interface

The geographical meeting point of two diverse systems, wildland and structures. At this interface, structures and vegetation are sufficiently close that a wildland fire could spread to structures or a structure fire ignite vegetation. See *intermix.*

intermix, or wildland intermix

Interspersing of developed land with wildland, where there are no easily discernible boundaries between the two systems. An example would be what real estate brochures describe as "ranchettes" or "weekend farmer" homes. Poses more problems in wildland fire management than *interface.*

I-zone

Casual reference to wildland interface and/or intermix.

late seral forest

A forest that has evolved, through successional processes, near to the end of the successional line, or climax forest. Only through disturbance (fire or clear-cutting, for example) will the forest return to an earlier seral (successional) stage.

pollution rights

In some areas, industries can buy and sell rights to emit specified amounts of pollutants.

ranger unit

Administrative unit of the CDF.

silviculture

The art of cultivating a forest; forestry.

stakeholder

Any person, agency or organization with a particular interest — a stake — in fire safety and protection of assets from wildland fires.

stand-replacing fire

A fire that kills most or all of the trees in a section of forest.

uncontrolled fire

Any fire that threatens to destroy life, property or natural resources, and either is not burning within the confines of firebreaks, or is burning with such intensity that it could not be readily extinguished with ordinary tools commonly available. See *wildfire.*

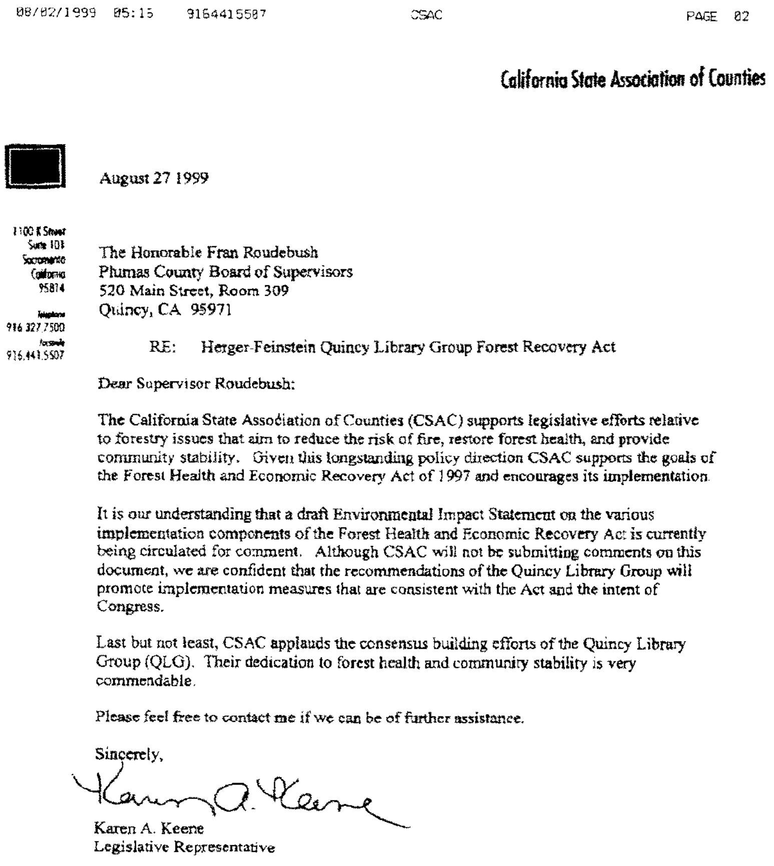
wildland fire

Any fire occurring on undeveloped land. See *wildfire.*

wildfire

A fire occurring on wildland that is not meeting management objectives and thus requires a suppression response.

Sources include the Glossary of Wildland Fire Terminology, produced by the Incident Command System Working Team; published by the National Wildfire Coordinating Group



California State Association of Counties

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August 27 1999

The Honorable Fran Roudebush
Plumas County Board of Supervisors
520 Main Street, Room 309
Quincy, CA 95971

RE: Herger-Feinstein Quincy Library Group Forest Recovery Act

Dear Supervisor Roudebush:

The California State Association of Counties (CSAC) supports legislative efforts relative to forestry issues that aim to reduce the risk of fire, restore forest health, and provide community stability. Given this longstanding policy direction CSAC supports the goals of the Forest Health and Economic Recovery Act of 1997 and encourages its implementation.

It is our understanding that a draft Environmental Impact Statement on the various implementation components of the Forest Health and Economic Recovery Act is currently being circulated for comment. Although CSAC will not be submitting comments on this document, we are confident that the recommendations of the Quincy Library Group will promote implementation measures that are consistent with the Act and the intent of Congress.

Last but not least, CSAC applauds the consensus building efforts of the Quincy Library Group (QLG). Their dedication to forest health and community stability is very commendable.

Please feel free to contact me if we can be of further assistance.

Sincerely,

Karen A. Keene

Karen A. Keene
Legislative Representative

2. Any federal grants or contracts (including subgrants or subcontracts) which were received since October 1, 1996, from the * by the organization(s) which you represent at this hearing, including the source and amount of each grant or contract:

3. Any other information you wish to convey to the committee which might aid the members of the Committee to better understand the context of your testimony:

*Note: When the witness letter is sent out, complete the blank to identify the Federal agency or agencies overseeing the program or law which is the subject of the hearing.

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Sincerely,

Karen A. Keene

Karen A. Keene
Legislative Representative

Aug-27-99 12:12P Frank Stewart 530-345-3876 P.01

Pilot Project - Economic Estimates
Final EIS

County	Acres % QLG/PP	Forest Reserve Revenues Annual Estimate	Economic Activities Annual Estmate
Plumas	46%	$9,660,000	$122,820,000
Lassen	19%	$3,990,000	$50,730,000
Shasta	12%	$2,520,000	$32,040,000
Tehama	8%	$1,680,000	$21,360,000
Sierra	7%	$1,470,000	$18,690,000
Butte	6%	$1,260,000	$16,020,000
Yuba	1%	$210,000	$2,670,000
Nevada	1%	$210,000	$2,670,000
FEIS Total Estmates:		$21,000,000	$267,000,000

Note:

"These values are valuable for making comparisons between alternatives: however they should not be interpreted as precise or exact values that will result from implementation of the alternatives."

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To E. Ruedebush	From F. Stewart
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AUG-27-1999 FRI 03:45 PM RCRC FAX NO. 19164483154 P. 02

Regional Council of Rural Counties

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July 6, 1999

Mr. David Peters, Project Manager
USDA – US Forest Service
Quincy Library Group, Forest Recovery Act Project EIS
P.O. Box 11500,
Quincy, Calif. 95971-6025.

Dear Mr. Peters:

The 27 member counties of the Regional Council of Rural Counties (RCRC) are strongly in support of Alternative 2 of the QLG Draft EIS. We believe that this alternative along with the comments submitted by Quincy Library Group provides social, environmental and economic benefits for all Californians.

The counties of the Sierra, some consisting of 90% federal lands, recognize that these federal lands are a national treasure. We feel strongly that local communities, involving a diverse cross-section of interests, have an important role in helping to shape the management of these lands. We believe that this type of local investment will lead to improving the overall health of the forest ecosystems and enhancing the quality of life for all that live in, and visit, the Sierras.

RCRC has been deeply involved in the CALFED Bay-Delta process and believes that Alternative 2 is consistent with CALFED's watershed objectives. The restoration of these watersheds, the enhancement of the fisheries and the reduction of fuel loads are vital to the water quality and availability for all Californians. One only has to look at the extensive effort to eradicate Northern Pike from Lake Davis in Plumas County to see the inter-dependency of our ecosystems.

We strongly support the findings of Alternative 2 and believe that it mirrors the intent of Congress and the Administration. We have reviewed the draft EIS and find it to completely validate the full QLG program. RCRC urges the Forest Service to quickly move forward with the selection and implementation of this alternative. If you have any question, or require additional information, please contact me at (916) 447-4806.

Sincerely,

David R. French
Director, Governmental Affairs

cc: Plumas County Board of Supervisors

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PLUMAS UNIFIED SCHOOL DISTRICT

SUPERINTENDENT'S RECOMMENDATION BUDGET REDUCTIONS

1992-93

(ADJUSTED)

In April, the Superintendent characterized the Plumas Unified School District as being at-risk financially. We were faced with a State that is not recovering from a recession and a sharp drop in Forest Reserve Funds. Forest Reserve Funds will hold for 1992-93, but the State is still struggling through the recession. As a school district in California, we are tied directly to the State economy and have no control over our local income. In April, we were faced with cutting our budget over $1 million and today we are facing a revised reduction of $769,000.

The Plumas Unified School District has, in recent years, made numerous reductions to balance the budget. Classified employees have been reduced and the District Office currently has 1 1/4 certificated administrators funded through the General Fund. The "easy" or traditional cutting has already been done. The budget reductions for the 1992-93 school year will begin to impact students and the educational program. The 1992-93 budget will reflect a reduction in teaching staff and a reduction in materials for students. The total impact of the cuts for 1992-93 will be softened somewhat by transfers from accounts and the implementation of a charge to employees to pay for increases in the cost of medical benefits. In recent years, the PUSD has paid all costs for medical fringe benefits. In 1992-83, the employees will pay a portion of the premiums equal to the cost increases.

The outlook for 1992-93 is still uncertain as the State still faces a recession. Our budget is built on income assumptions that were presented by the Governor in January. It is possible that further cuts will be implemented when the State budget is adopted. It is conceivable that the PUSD could face additional costs of $400,000 to $1.2 million in the next three weeks. This is out of our control and we can only wait and hope.

The prospect for 1993-94 is extremely bleak for the PUSD with Forest Reserves projected to drop by $1.2 million and the California economy still not breaking free from the recession.

1992-93 BUDGET PROCESS

The 1992-93 budget process has not been as thorough as the Board or Superintendent would have liked. The last five months have been spent clarifying a budget format from the previous administration and ensuring that all expenditures were posted to the proper accounts. In developing our new budget format, it was necessary to rebuild the budget from the previous year. This time-consuming process was compounded by the small staff assigned to the Business Department in the District Office. Both Lisa Farnworth-Turner, Accountant, and Cathy Schmidt, Supervisor of Business and Personnel Services, devoted numerous extra hours and weekends to make the needed changes. They reviewed the expenditures of over $18 million dollars in just a few short weeks.

Given the process of rebuilding the 1991-92 budget and then transferring it to a new format for 1992-93, the information was not available in a timely manner to get thorough staff and community input. However, when information did become available, the principals at all school sites conducted meetings with their staff and various community groups to inform and solicit ideas and recommendations. In reviewing the outcomes of the various meetings, it was the consensus of the principals that everyone recognizes the severity of the budget problem and the difficult task that the Board of Trustees faces in making actual cuts. The cuts suggested ranged across a broad spectrum. Many represented only minimal savings of a few hundred dollars, several are not legally possible due to Federal and State mandates, and numerous will require detailed study and review to determine actual budgetary impacts.

The cuts recommended by the Superintendent are only partially guided by the outcomes of the numerous meetings. This does not mean the meetings were not valuable or were a waste of time. On the contrary, the meetings set the direction for our planning for the 1993-94 budget when far more severe cuts will be necessary. This year's meetings will prove to be invaluable as we start the planning process for the 1993-94 budget.

SUPERINTENDENT'S RECOMMENDED CUTS FOR 1992-93 BUDGET
(Priority order)

1. **Consolidate Shared Contracts** $137,960
   The superintendent took administrative action to consolidate shared contracts and reduce the number of fringe benefit packages paid. This action resulted in the reduction of 3.0 FTE teachers and 6 fringe benefit packages.

2. **Reduction of Temporary Teachers** $ 27,764
   There were three positions district-wide that were temporary slots on a one-time basis. These positions will not be refilled.

3. **Insurance Co-Payment** $164,102
   Both negotiated contracts allow the District to require the employees to pay for insurance increases over the base year of 1990. A payment of $403.20 would be

charged to 407 employees.

4. **Attrition** $200,000
Employees who leave through resignation or leaves would not be replaced. Evaluation of this will be on a case-by-case basis. It is anticipated that we will lose 5 FTE through attrition who will not be replaced for 1992-93.

5. **Attrition/Transfer, Special Education** $ 80,000
We have experienced the loss of two special education teachers for the 1992-93 school year. These teachers will be replaced by regular education teachers transferring into these positions.

6. **50% Reduction in School Site Carryover** $80,350
Each year we carryover into the next year money that was not spent from discretionary accounts at the school sites. This money has been a "savings account" for the school sites. This carryover is not a standard practice in many districts. A 50% reduction will have an impact, but not totally disrupt future plans for the carried-over funds.

7. **District Travel & Mileage (6401-5210)** $ 5,000
The 5210 account for the district administrative was cut $9,162 from the 1991-92 budget. This cut represents an additional $5,000 reduction in this account.

8. **District Supplies (6401-4300)** $ 2,500
This account was overspent by approximately $2,000 in 1991-92, reflecting the need to distribute materials. A reduction of $2,500 represents a 16% reduction. When this is added to the $2,000 of additional 1991-92 expenditures, it represents an impact of about 25%.

9. **Reduction in Site Discretionary** $ 39,500
A reduction of $10 per student in the amount spent on instructional supplies and equipment. This may be offset by an increase in money funded to class size overage funds used by teaches for materials, field trips, or aide time.

10. **Telephones** $ 16,000
All principals will monitor all phone bills and plan to

cut or consolidate all long-distance calls.

11. **Elimination of Alternative Education Contract** $ 10,000
During 1991-92 the PUSD contracted with Mr. Bill Cottini to manage the alternative education and summer school programs. This contract was for $15,000. The summer school position was separated and contracted at $5,000 which results in a $10,000 savings.

SUBTOTAL $763,176

12. **Capital Outlay and Improvements (6200)** $ 10,000
In 1992-93 we will conduct our chemical sweep to get rid of materials now classified as toxic. We should be able to cut in this area.

SUBTOTAL $773,176

13. **Textbooks, General Purpose (6101-4140)** $ 66,750
Replace only essential textbooks and materials. We will still have $15,000 left in this account.

SUBTOTAL $839,926

14. **Maintenance Overtime** $ 2,000

SUBTOTAL $841,926

15. **Athletic Transportation** $ 62,950
Represents the total cost for all athletic transportation.

SUBTOTAL $904,876

PH:ajk
6/10/92
6/15/92 Adjusted

environmental devastation that lies ahead for some 39 million acres of national forest lands in the 11 western states.

I believe the experts are correct, and that the "Window of Opportunity" for the US Forest Service to implement a meaningful and consistent plan of action is rapidly closing as evidenced by the current situation. As such, the US Forest Service must move decisively and grab the golden ring handed to them by this committee and charge through the "Window of Opportunity" to aggressively implement the forest health and fuel reduction programs of the Pilot Project at the maximum scale, pace and resolve that budgets will allow.

Through the GAO report, the forest service views the construction of strategic fuel breaks as a method to reduce fuel hazards without reducing the fuel loads in order to isolate and limit the spread of catastrophic fires. As such, fuel breaks are viewed as a short term and last resort strategy.

Under the Pilot Project however, the system of strategically located Defensible Fuel Profile Zones (Shaded Fuel breaks) are viewed as the first phase in a two step strategy to reduce fuel loads and improve forest health conditions across the landscape. Once the DFPZ system is established across the landscape, then further fuel reduction and thinning projects should continue on the matrix lands between the various DFPZ's. Since the silvicultural prescriptions utilized during phase one and phase two meet the desired future conditions of an all aged multi-storied and species stand structure, the matrix lands and DFPZ lands will be indistinguishable over time.

Though the Pilot Project covers 2.5 million acres of national forest lands on three national forests in eight counties, private property and various communities within this area will also be impacted. Intermingled and adjacent to the Pilot Project area is an additional 2.3 million acres of private property and forests.

To maximize the total environmental benefits of the DFPZ system, annual forest service rojects must be coordinated with the various private industrial and non-industrial land wners as well as the communities within and adjacent to the Pilot Project area. Through he County Fire Safe Councils in Plumas, Butte, Yuba, Placer-Nevada, Lassen and Shasta ounties, the forest service is provided an opportunity to coordinate fuel reduction and FPZ projects in various watersheds with the other property owners. Several fuel eduction projects are currently taking place within the pilot project area and more will evelop as the forest service implements the planning phase associated with the FY-2000 rojects:

> Yuba County Fire Safe Council has a fuel reduction project funded under Propositio 204 that coordinates efforts of Plumas National Forest, Soper Wheeler Company an various non-industrial land owners along Oregon Ridge Road in Yuba County.

- Butte County Fire Safe Council has a local fuel reduction education project sponsored by the Forest Ranch Preservation Alliance. This fuel reduction "demonstration" project was initiated by the private land owners and is located on state right-away along Hiway 32. During the current fire storm, the FRPA established a vital information center at the Post Office in Forest Ranch in order to provide accurate and timely fire information to the citizens of Forest Ranch. The California Department of Forestry, US Forest Service and the media utilized this valuable community asset to get the appropriate information to the citizens.

- Lassen/Plumas County Fire Safe Councils are working with industrial and non-industrial private forest land owners, Lassen National Forest and Pacific Gas and Electric in constructing a Shaded Fuel Break project around the communities in the Lake Almanor area of Plumas County.

The pace of the construction of DFPZ's across the landscape is the key to the success of the Pilot Project. To construct a DFPZ that is one mile long by a quarter mile wide, 160 acres must be treated. The Act sets the a range of 40,000 to 60,000 acres of treated DFPZ's annually for the term of the Pilot Project. The impact of such a range option over the term of the Pilot Project can be quite significant:

Range	Annual Acres	Total Acres	Total Miles
Minimum	40,000 acres	200,000 acres	1,250 miles
Maximum	60,000 acres	300,000 acres	1,875 miles

The Draft and Final Environmental Impact Statements reveal that the Pilot Project is being planned at the 44,000 acre annual level which translate to a total of 220,000 acres or 1,375 miles of DFPZ construction. Though these minimal performance targets meet the requirements of the Act, they only attain 73% of the authorized opportunity to treat fuel load conditions across the landscape. Since this is a Pilot Project that is intended to test the merits of a strategic system of Defensible Fuel Profile Zones, then performance standards and targets must be raised to the maximum potential authorized under the Act. If environmental problems develop during the implementation phase, then the monitoring and independent third party scientific evaluation process will correct any project deficiencies.

In addition to the magnitude of the fuel reduction across the landscape, the issue of pace also has direct impacts on the social and economic well being of the citizens and businesses within the eight county area of the Pilot Project. The following information has been taken from various tables in the FEIS. For comparison purposes, Alternative 5 is shown to relate the social and economic impacts of the management theory promoted under the concept of large land reserves, wide riparian buffer zones and minimal mechanical fuel reduction with the utilization of wildfire and prescribed fire as the main vegetation management prescriptions. Figures relate the total impact of the Pilot Project for the term period of five years:

Identify High-Risk/High-Value Areas: Based upon the analyses and the GIS databases described above, a ranger unit map is generated that identifies high-risk/high-value areas where large damaging wildfires are most likely to occur and become high-cost and high-loss conflagrations. These can be ranked from highest to lowest priorities for future resource allocations decisions.

Validate High-Risk/High-Value Areas by the ranger units: Most of the data used to generate the high-risk/high-value maps were developed from GIS overlays of databases for areas within ranger units. Much of this data needs to be validated on the ground by ranger unit personnel to assure that the high-risk/high-value and most likely to burn areas are properly mapped. Based upon this field review of the areas, modifications and corrections are input to the central GIS databases and revised maps are generated for use by the ranger unit and headquarters personnel in developing prefire management projects.

Prefire management projects decrease risks of high losses and suppression costs.

Identify Prefire Management Projects: The prefire management staff at the ranger units then develop a prefire management plan for the ranger unit. The prefire management plan includes specific projects for the high-risk/high-value areas that will *decrease the risks that a large fire in a specific area will occur, and create high costs to contain and high losses to the citizens.* The assumption used in developing the prefire management ranger unit plan is that a proposed prefire management project will reduce the costs and losses during periods of severe fire weather, which is when most of California's wildfire costs and losses occur. Thus, if a prefire management project is implemented, then the size and severity of a large fire burning in that specific high-risk/high-value area would be contained at a smaller size, would burn with lower temperatures and severity, would significantly reduce suppression costs and would result in significantly lower levels of losses.

Conduct Stakeholder Forums: The purpose is to acquaint stakeholders with the process; bring their expertise and knowledge to bear on the asset maps, which also identify areas of high, medium and low risk; to review the level of service in these locations, and to identify areas where the stakeholders consider the level unacceptable.

Stakeholders help set priorities on prefire management projects

Ranger unit personnel will take the results of the above analyses into public forums with the following stakeholders:

○ State, local and federal agencies with responsibilities for wildland protection in a specific area of the ranger unit, including USDA Forest Service, Bureau of Land Management, National Park Service; fire districts, county fire departments and other fire service cooperating agencies; local planning departments and county supervisors responsible for land-use planning.